DIGITAL DATCOM INPUT QUANTITIES

NAMELIST ASYFLP

Asymmetrical Control Deflection Unit

Variable Name	Dim	Definition	p.62 Units
DELTAL	9	deflection angle for left hand plain flap aileron or left hand panel all moveable horizontal tail, measured in vertical plane of symmetry	deg
DELTAR	9	deflection angle for right hand plain flap aileron or right hand panel all moveable horizontal tail, measured in vertical plane of symmetry	deg
DELTAD	9	projected height of deflector, spoiler-slot deflector control; fraction of chord	-
DELTAS	9	projected height of spoiler, flap spoiler, plug spoiler and spoiler-slot deflector control; fraction of chord	-
XSOC	9	distance from wing leading edge to spoiler lip, measured parallel to streamwise wing chord, flap and plug spoilers; fraction of chord	-
HSOC	9	projected height of spoiler measured from and normal to airfoil mean line, flap spoiler, plug spoiler and spoiler-slot-reflector; fraction of chord	-
STYPE	-	=1.0 flap spoiler on wing	-
	-	=2.0 plug spoiler on wing	
	-	=3.0 spoiler-slot-deflection on wing	
	-	=4.0 plain flap aileron	
	-	=5.0 differentially deflected all moveable horizontal tail	
XSPRME	-	distance from wing leading edge to spoiler hinge line, measured parallel to streamwise wing chord, flap spoiler, plug spoiler and spoiler-slot deflector control; fraction of chord	-
	-		
NDELTA	-	number of control deflection angles; required for all controls, max of 9	
CHRDFI	-	aileron chord at inboard edge of plain flap aileron, measured parallel to longitudinal axis	length
CHRDFO	-	aileron chord at outboard edge of plain flap aileron, measured parallel to longitudinal axis	length
SPANFI	-	span location of of inboard edge of flap or spoiler control measured perpendicular to the vertical plane of symmetry	length
SPANFO	-	span location of of outboard edge of flap or spoiler control measured perpendicular to the vertical plane of symmetry	length
PHETE	-	tangent of airfoil trailing edge angle based on ordinates at x/c=0.90 and 0.99	-

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST BODY			
Body Geometry Data			
Variable			p.36
Name	Dim	Definition	Units
NX	-	number of longitudinal body stations at which data is	-
		specified, maximum of 20	
X	20	longitudinal distance measured from arbitrary locn.	length
S	20	cross sectional area	area
P	20	periphery at station x(i)	length
R	20	planform half width	length
ZU	20	z-coordinate at upper body surface	length
		(positive when above centerline)	
ZL	20	z-coordinate at lower body surface	length
		(~~positive~~ when below centerline)	
BNOSE	-	BNOSE=1 conical nose; BNOSE=2 ogive nose	-
BTAIL	-	BTAIL=1 conical tail; BTAIL=2 ogive tail	-
BLN	-	length of body nose	length
BLA	-	length of cylindrical afterbody segment	length
DS	-	nose bluntness diameter, zero for sharp nosebodies	length
ITYPE	-	=1 straight wing, no area rule	-
		=2 swept wing, no area rule	
		=3 swept wing, area rule	
		set to 2 if not input	
METHOD	-	=1, use existing methods	-
		=2, use Jorgensen method	
ELLIP	-	*** NOT DEFINED IN DOCUMENT ***	-

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST CONTAB

Control tabs			
Variable			p.69
Name	Dim	Definition	Units
TTYPE	-	=1 tab control	
		=2 trim tab	
		=3 both	
CFITC		inboard chord, control tab	
CFOTC		outboard chord, control tab	
CFITT		inboard chord, trim tab	
CFOTT		outboard chord, trim tab	
BITC		inboard span location, control tab	
BOTC		outboard span location, control tab	
BITT		inboard span location, trim tab	
BOTT		outboard span location, trim tab	
B1		see Table 11 for definitions	
B2		"	
B3		"	
B4		"	
D1		"	
D2		"	
D3		"	
GCMAX		"	
KS		"	
RL		"	
BGR		"	
DELR		"	
		if the system has a spring, (if KS input),	
		then free stream dynamic pressure is required	

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST EXPR			
Experimental data input			
Variable			p.45
Name	Dim	Definition	Units
CDB	20		
CLB	20		
CMB	20		
CLAB	20		
CMAB	20		
CDW	20		
CLW	20		
CMW	20		
CLAW	20		
CMAW	20		
CDH	20		
CLH	20		
CMH	20		
CLAH	20		
CMAH	20		
CDWB	20		
CLWB	20		
CMWB	20		
CLAWB	20		
CMAWB	20		
QOQINF	20		
EPSLON	20		
DEODA	20		
CDV	20		
ALPOW	-		
ALPLW	-		
ALPOH	-		
ALPLH	-		
ACLMW	-		
CLMW	-		
ACLMH	-		
CLMH /	-		

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST FLTCON

Flight Conditions

Variable Name	Dim	Definition	p.27 Units
NMACH	-	number of Mach numbers or velocities to be run, maximum of 20	
MACH	20	values of freestream Mach number	
VINF	20	Values of freestream speed	l/t
NALPHA	-	number of angles of attack to be run, maximum of 20	
ALSCHD	20	values of angle of attack, tabulated in ascending order	deg
RNNUB	20	Reynolds Number per unit length	1/l
NALT	-	Number of atmospheric conditions to be run maximum of 20	
ALT	20	values of geometric altitudes	
PINF	20	values of freestream static pressure	
TINF	20	values of freestream temperature	
HYPERS	-	=TRUE then hypersonic analysis at all Mach numbers greater than 1.4	
STMACH	-	upper limit of Mach numbers for subsonic analysis must not be less than 0.6 and not greater than 0.99 STMACH is set to 0.6 if not input	
TSMACH	-	lower limit of Mach numbers for supersonic analysis must be > 1.01 and not greater than 1.4 TSMACH is set to 1.4 if not input	
TR	-	drag due to lift transition flag, for regression analysis of wing-body configurations =0.0 for no transition, default =1.0 for transition strips or full scale flight	
WT		Vehicle weight	force
GAMMA		Flight path angle	degrees
LOOP		PROGRAM LOOPING CONTROL =1 vary altitude and Mach number together, default =2 vary Mach, at fixed altitude =3 vary altitude, at fixed Mach	

$$Re = \frac{\rho V}{\mu}$$

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST GRNDEF

Ground Effect

Variable Name	Dim	Definition	p.53 Units
NGH	-	Number of ground heights to be run	
GRDHT	10	Values of ground heights, ground heights equal altitude of reference plane relative to ground	

NAMELIST HYPEFF

Flap Control at Hypersonic Speeds

Variable Name	Dim	Definition	p.67 Units
ALITD	-	altitude	length
XHL	-	distance to control hinge line measured from the leading edge	length
TWOTI	-	ratio of wall temperature to the free stream static temperature	
CF	-	control chord length	length
LAMNR	-	=.TRUE. if boundary layer at hinge line is laminar	
	-	=.FALSE. if boundary layer at hinge line is not laminar	
HNDLTA	-	number of flap deflection angles (max of 10)	
HDELTA	10	control deflection angle, positive trailing edge down	

NAMELIST JETPWR

Jet Power Parameters

Variable Name	Dim	Definition	p.51 Units
AIETLJ	-	angle of incidence of engine thrust line	deg
NENGSJ	-	number of engines (1 or 2)	-
THSTCJ	-	thrust coefficient	-
JIALOC	-	axial location of jet engine inlet	length
JEVLOC	-	vertical location of jet engine exit	length
JEALOC	-	axial location of jet engine exit	length
JINLTA	-	jet engine inlet area	area
JEANGL	-	jet exit angle	deg
JEVELO	-	jet exit velocity	length/time
AMBTMP	-	ambient temperature	deg
JESTMP	-	jet exit static temperature	deg
JELLOC	-	lateral location of jet engine	length
JETOTP	-	jet exit total pressure	pressure
AMBSTP	-	ambient static pressure	pressure
JERAD	-	radius of jet exit	length

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST LARWB

Low Aspect Ratio Wing, Wing-Body Input

Variable Name	Dim	Definition	p.64 Units
ZB	-	vertical distance between centroid of base area	l
		and body reference plane	
SREF	-	planform area used as reference area	
DELTEP	-	sharp leading edge parameter	
SFRONT	-	projected frontal area perpendicular to	
		zero normal force reference plane	
AR	-	aspect ratio of surface	
R3LEOB	-	round leading edge parameter	
DELTAL	-	round leading edge parameter	
L	-	length of body used as longitudinal	
		reference length	
SWET	-	wetted area, excluding base area	
PERBAS	-	perimeter of base	
SBASE	-	base area	
HB	-	maximum height of base	
BB	-	maximum span of base, used as	
		lateral reference length	
BLF	-	if TRUE, portions of base are aft of	
		non-lifting surface. FALSE otherwise	
XCG	-	longitudinal distance of CG from nose	
THETAD	-	wing semi-apex angle	
ROUNDN	-	TRUE for rounded nose	
		FALSE for pointed nose	
SBS	-	projected side area of configuration	
SBSLB	-	projected side area of configuration	
		forward of 0.2 length of body	
XCENSB	-	distance from nose of vehicle to centroid	
		of projected side area	
XCENW	-	distance from nose of configuration to	
	-	centroid of plan area	

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST OPTINS

Options			
Variable			p.29
Name	Dim	Definition	Units
ROUGFC	-	surface roughness factor, equivalent	
		sand roughness. Default to 0.16 millinches	
		or 0.4E-3 cm	
SREF	-	reference area. Value of the theoretical wing	
		area used by program if not input.	
CBARR	-	longitudinal reference length. Value of	
		theoretical wing mean aerodynamic chord	
		used if not input	
BLREF	-	lateral reference length. Value of wing span	
		used if not input	

NAMELIST PROPWR

Propellor Power Parameters			
Variable			p.49
Name	Dim	Definition	Units
AIETLP	-	angle of incidence of engine thrust axis	deg
NENGSP	-	number of engines (1 or 2)	
THSTCP	-	thrust coefficient	
PHALOC	-	axial location of propellor hub	
PHVLOC	-	vertical location of propellor hub	
PRPRAD	-	propellor radius	
ENGFCT	-	empiricaal normal force factor	
BWAPR3	-	blade width at 0.3 propeller radius	
BWAPR6	-	blade width at 0.6 propeller radius	
BWAPR9	-	blade width at 0.9 propeller radius	
NOPBPE	-	number of propeller blades per engine	
BAPR75	-	blade angle at 0.75 propeller radius	
CROT	-	=TRUE for counter rotating propellors	
		=FALSE for non-counter rotating propellors	
YP	-	lateral location of engine	
	-		

DIGITAL DATCOM INPUT QUANTITIES

NAMELIST SYMFLP

Synnetrical Flap Deflection

Variable Name	Dim	Definition	p.57 Units
CHRDFI		flap chord at inboard edge of plain flap aileron,	
		measured parallel to longitudinal axis	
CHRDFO		flap chord at outboard edge of plain flap aileron,	
		measured parallel to longitudinal axis	
SPANFI		span location of of inboard edge of flap or spoiler control	
		measured perpendicular to the vertical plane of symmetry	
SPANFO		span location of of outboard edge of flap or spoiler control	
		measured perpendicular to the vertical plane of symmetry	
NDELTA		number of control deflection angles; required for all	
		controls, max of 9	
PHETEP		tangent of airfoil trailing edge angle based on	
		ordinates at x/c=0.95 and 0.99	
PHETE		tangent of airfoil trailing edge angle based on	
		ordinates at x/c=0.90 and 0.99	
FTYPE		=1 plain flaps	
		=2 single slotted flaps	
		=3 fowler flaps	
		=4 double slotted flaps	
		=5 split flaps	
		=6 leading edge flap	
		=7 trailing edge flap	
		=8 Krueger	
NTYPE		nose type	
		=1 round nose flap	
		=2 elliptical nose flap	
		=3 sharp nose flap	
SCHA			
CB		average chord of the balance	
TC		average thickness of the control at the hinge line	
SCHD			
DELTA		flap deflection angle measured streamwise	
CPRMEI		total wing chord at inboard edge of flap	
CPRMEO		total wing chord at outboard edge of flap	
SCLD		increment in section lift coefficient	
SCMD		increment in section pitching moment coefficient	
CMU		two dimensional jet efflux coefficient	
DELJET		jet deflection angle	
JETFLP		=1 pure jet flap	
		=2 internally blown flap	
		=3 externally blown flap	
		=4 combination mechanical and pure jet flap	
EFFJET		EBF effective jet deflection angle	
CAPINB			
CAPOUT			
DOBDEF			

DIGITAL DATCOM INPUT QUANTITIES

DOBCIN			
DOBCOT			
NAMELIST SYNTHS			
Synthesis			
Variable			p.33
Name	Dim	Definition	Units
XCG	-	longitudinal location of CG,	
		(moment reference center)	
ZCG	-	vertical location of CG relative to reference plane	
XW	-	longitudinal location of theoretical wing apex	
ZW	-	vertical location of theoretical wing apex relative	
	-	to reference plane	
ALIW	-	wing root chord incidence angle measured from	
	-	reference plane	
XH	-	longitudinal location of theoretical horizontal	
		tail apex	
ZH	-	vertical location of theoretical horizontal tail	
		apex relative to reference plane	
ALIH	-	horizontal tail root chord incidence angle	
	-	measured from reference plane	
XV	-	longitudinal location of theoretical vertical tail apex	
VERTUP	-	=TRUE if vertical panel is above reference plane	
		=FALSE if vertical panel is below reference plane	
HINAX	-	longitudinal location of horizontal tail hinge axis	
	-		
XVF	-	longitudinal location of theoretical vertical fin apex	
SCALE	-	vertical scale factor multiplier to input dimensions	
ZV	-	vertical location of theoretical vertical tail apex	
ZVF	-	vertical location of theoretical vertical fin apex	
YV	-	*** NOT DEFINED IN DOCUMENT ***	
YF	-	*** NOT DEFINED IN DOCUMENT ***	
PHIV	-	*** NOT DEFINED IN DOCUMENT ***	
PHIF	-	*** NOT DEFINED IN DOCUMENT ***	

DIGITAL DATCOM INPUT QUANTITIES

	-		
NAMELIST TRNJET			
Transverse Jet Control Input			
Variable			p.65
Name	Dim	Definition	Units
NT	-	number of time history values, max of 10	
TIME	10	time history	time
FC	10	time history of control force required to trim	force
ALPHA	10	time history of attitude	deg
LAMNRJ	-	time history of boundary layer, where	
	-	.TRUE. = boundary layer is laminar at jet	
	-	.FALSE. = boundary layer is not laminar at jet	
ME	-	nozzle exit Mach number	
ISP	-	jet vacuum specific impulse	time
SPAN	-	span of nozzle normal to flow direction	length
PHE	-	inclination of nozzle center line relative to	
	-	an axis normal to the surface	
GP	-	specific heat ratio of propellant	
CC	-	nozzle discharge coefficient	
LFP	-	distance of nozzle from plate leading edge	length
NAMELIST TVTPAN			
Twin Vertical Panel Input			
Variable			p.55
Name	Dim	Definition	Units
BVP		vertical panel span above lifting surface	L
BV	-	vertical panel span	
BDV	-	fuselage depth at quarter-chord of vertical	L
		panel mean aerodynamic chord	
BH	-	distance between vertical panels	L
SV	-	planform area of one vertical panel	A
VPHITE	-	total trailing edge angle of vertical panel	
		airfoil section	DEG
VLP	-	distance parallel to the longitudinal axis between	L
		the CG and the quarter chord point of the MAC	
		of the panel. Positive is aft of the CG.	
ZP	-	distsnce in the z-direction between the CG and	
		the MAC of the panel. Positive for panel above CG.	

DIGITAL DATCOM INPUT QUANTITIES

NAMELISTS WGPLNF,HTPLNF,VTPLNF,VFPLNF

Planform			
Variable		Namelists WGPLNF, ... p.37	
Name	Dim	Definition	
CHRDTP	-	tip chord	length
SSPNOP	-	semispan, outboard panel	length
SSPNE	-	semispan of exposed panel	length
SSPN	-	semispan theoretical panel from theoretical root chord	length
CHRDBP	-	chord at breakpoint	length
CHRDR	-	root chord	length
SAVSI	-	inboard panel sweep angle	deg
SAVSO	-	outboard panel sweep angle	deg
CHSTAT	-	reference chord station for inboard and outboard	
		panel sweep angles, fraction of chord	
TWISTA	-	twist angle, negative leading edge rotated down	
SSPNDD	-	semispan of outboard panel with dihedral	length
DHDADI	-	dihedral angle of inboard panel	deg
		(if DHDADI=DHDADO, only input DHDADI)	
DHDADO	-	dihedral angle of outboard panel	
TYPE	-	= 1.0 STRAIGHT TAPERED PLANFORM	-
	-	= 2.0 double delta planform (aspect ratio < 3)	
	-	= 3.0 cranked planform (aspect ratio > 3)	
SHB	-	Portion of fuselage side area that lies between Mach	area
	-	LINES ORIGINATING FROM LEADING AND TRAILING EDGES	
	-	OF HORIZONTAL TAIL EXPOSED ROOT CHORD	
	-		
SEXT	-	portion of extended fuselage side area that lies between	area
	-	Mach lines originating from leading and trailing edges	
	-	of horizontal tail exposed root chord	
	-		
RLPH	-	longitudinal distance between CG and centroid of SHB	length
	-	positive aft of CG	
SVWB	-	portion of exposed vertical panel area that lies	area
	-	between Mach lines emanating from leading and	
	-	trailing edges of wing exposed root chord	
SVB	-	area of exposed vertical panel not influenced by wing	area
	-	or horizontal tail	
SVHB	-	portion of exposed vertical panel area that lies between	
	-	Mach lines emanating from leading and trailing edges	
	-	of horizontal tail exposed root chord	

DIGITAL DATCOM INPUT QUANTITIES

NAMELISTS WGSCHR, HTSCHR, VTSCHR, VFSCHR

Section Characteristics

Variable Name	Dim	Definition	Units
TOVC	-	maximum airfoil section thickness	
		thichness, fraction of chord	
DELTAY	-	difference between airfoil ordinates	
		at 6% and 15% chord, percent chord	
XOVC	-	chord location of maximum airfoil	
		thickness, fraction of chord	
CLI	-	airfoil section design lift coefficient	
ALPHAI	-	angle of attack at section	
		design lift coeff., degrees	
CLALPA	20	airfoil section lift curve slope	
		per degree	
CLMAX	20	airfoil section maximum lift coefficient	
CAMBER	-	cambered airfoil section flag	
CM0	-	section zero lift pitching moment	
CMO	-	same as CM0	
XOVCO	-	(x/c)max for outboard panel	
	-	Cm-zero for outboard panel	
LERI	-	airfoil leading edge radius, fraction of chord	
LERO	-	airfoil leading edge radius for outboard panel,	
TOVCO	-	t/c for outboard panel	
CMOT	-	pitching moment coeff at zero lift, outboard panel	
CM0T		same as CMOT	
TCEFF	-	planform effective thickness ratio, fraction of chord	
KSHARP	-	wave drag factor for sharp-nose	
CLMAXL	-	airfoil maximum lift coeff. at M=0	
SLOPE	6	airfoil surface slope at	
CLAMO	-	airfoil section lift curve slope at M=0, per deg.	
CLAM0	-	same as CLAMO	
ARCL	-	aspect ratio classification (see Table 6)	
XAC	-	section aerodynamic center	
		fraction of chord	
DWASH	-	subsonic downwash method flag	
		=1 use DATCOM method 1	
		=2 use DATCOM method 2	
		=3 use DATCOM method 3	
YCM	-	airfoil maximum camber,	
CLD	-	conical camber design lift coeff.	
		fraction of chord	
		for M=1 design	
TYPEIN	-	type of airfoil section coordinates	
		input for airfoil section module	
		=1 upper and lower surface coor.	
		=2 mean line and thickness	

DIGITAL DATCOM INPUT QUANTITIES

NPTS	-	number of section points input	
XCORD	50	abscissas of input points, TYPEIN=1	
		fraction of chord, and requires	
		xcord(1)=0 and xcord(npts)=1	
YUPPER	50	ordinates of upper surface, TYPEIN=1	
		fraction of chord, and requires	
		ylower(1)=0 and ylower(npts)=0	
YLOWER	50	ordinates of lower surface, TYPEIN=1	
		fraction of chord, and requires	
		ylower(1)=0 and ylower(npts)=0	
MEAN	50	ordinates of mean line, TYPEIN=2	
		fraction of chord, and requires	
		mean(1)=0 and mean(npts)=0	
THICK	50	thickness distribution, TYPEIN=2	
		fraction of chord, and requires	
		thick(1)=0 and thick(npts)=0	
ALPHAO	-	?	
ALPHA0	-	same as ALPHAO	