



# DECUS

## PROGRAM LIBRARY

DECUS NO.	12-59
TITLE	FOCPLOT
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COMPANY	Case Western Reserve University Cleveland, Ohio
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SOURCE LANGUAGE	LAP-6, DIAL-MS



# FOCPLOT

DECUS Program Library Write-up

DECUS NO. 12-59

/AN ADAPTATION OF THE CALCOMP PLOTTING PACKAGE (DECUS NO. 8-168)  
/FOR USE WITH FOCAL-12  
/  
/  
/DATA TO BE PLOTTED IS WRITTEN ON LINC TAPE USING FOCAL-12  
/THESE TAPE FILES MAY THEN BE PLOTTED USING FOCPLOT  
/ANNOTATION, AXES, AND LEGEND ARE AVAILABLE.  
/  
/  
/  
/  
/THE SERIES OF POINTS TO BE PLOTTED  
/MUST BE STORED AS FOCAL TAPE FILES  
/OF UNSIGNED INTEGER FORMAT.  
/SEPARATE FILES ARE USED FOR THE  
/X AND Y VECTORS  
/  
/DATA MAY BE UP TO 3 TAPE BLOCKS LONG  
/POSITIVE AND NEGATIVE  
/NUMBERS ARE PERMITTED  
/  
/  
/THE LOCATION OF DATA ON TAPE AND ANNOTATION  
/PARAMETERS ARE INTERACTIVELY SOLICITED.  
/BY THE PROGRAM AT RUN TIME  
/  
/  
/DATA LOCATION IS SPECIFIED TO THE  
/PROGRAM BY THE STARTING BK NUMB.  
/IF DATA FILES WERE MADE BY NAME  
/THE DX COMMAND MAY BE USED TO  
/OBTAIN THE STARTING TAPE BLK NUMB.  
/ALL SCALING MUST BE DONE BY USER  
/IN FOCAL. THE PERMITTED RANGE FOR Y IS  
/0-1100 (THIS IS FULL PAGE, NO ROOM FOR  
/AXIS.) OR ANY COMBINATION OF + AND -  
/VALUES WITH RANGE < 1100  
/THE X AXIS IS 850 STEPS PER PAGE  
/PLOTS MAY BE MADE ACROSS PAGE BOUNDS  
/

/THE NUMBER OF DATA POINTS TO BE  
 /PLOTTED MUST BE STORED BY FOCAL  
 /IN THE 00 LOCATION OF THE TAPE  
 /FILE TO BE USED FOR THE X AXIS  
 / EG. IF F1 WILL BE TAPE FILE  
 / FOR THE X VECTOR SET  
 / F1(0)=NO. OF DATA POINTS  
 /THE 00 LOCATION IN Y VECTOR IS  
 /IGNORED  
 /  
 /THE 0,0 REFERENCE LOCATION FOR  
 /THE PLOT IS MANUALLY SET BY THE USER  
 /ANYWHERE ON THE PAGE  
 /

/  
 /TO USE AXES OR LEGEND THE  
 /PROGRAM FOCAXIS MUST BE REASSEMBLED  
 /THIS PROGRAM IS AN OVERLAY FOR FOCPLOT  
 /WHICH CONTAINS TEXTSTRINGS AND  
 /PARAMETERS FOR THE AXES AND LEGEND  
 / (AXIS PARAMETERS ARE AS SPECIFIED IN DECUS NO. 8-168)  
 /

/THIS IS DONE:  
 / 1. CL (CLEAR WORKING AREA)  
 / 2. ZE (ZERO BINARY)  
 / 3. AP FOCAXIS, <UNIT>  
 / 4. CHANGE SOURCE TO INCLUDE APPROPRIATE PARAMETERS  
 / 5. AS (ASSEMBLE OVERLAY)  
 / 6. AB FOCPLOT, <UNIT>  
 / 7. SB <PROGNAME>, <UNIT>, L04400  
 /

/ THE PROGRAM PROGNAME WILL THEN CONTAIN FOCPLOT  
 /AND THE OVERLAY PARAMETERS.  
 /

/FOCPLOT CAN BE USED WITHOUT THE OVERLAY  
 /IF THE AXIS OR LEGEND OPTIONS ARE NOT  
 /REQUIRED  
 /

/CORE ALLOCATION

/ 00100-00153	DECUS NO. 8-168	(PLOT. PACKAGE)
/ 02400-04300	"	"
/ 11000-11665	DEC 12-FISA-D	QANDA
/ 04776-07773	DATA VECTORS	
/ 04400-04452	FOCPLOT	
/ 10020-10776	" "	

/THE PROGRAM SUBPLOT CONSISTS OF THE  
/PLOTING PACKAGE AND QANDA ASSEMBLED  
/AT THE ABOVE LOCATIONS AND CAN BE USED  
/AS AN OVERLAY IF THE FOCPLOT SOURCE IS TO BE REASSEMBLED.

/  
/  
/  
/  
/

/THE PROGRAM STARTS IN LINC MODE AT 4400

/  
/  
/  
/  
/  
/



FOCPLOT

```

0103          PLOTX=117
0104          ALPHA=132
0105          DLTR=143
0106          AXIS=136
0107          NUMBER=133
0110          DSYM=142
0111          LINE=131
0112          GAINIT=1000
0113          QARF SH=1053
0114          DAXIS=520
0115          *4400
0116          LMODE
0117          LIF 4
0120          0401 6020          JMP START1          /STARTS PROC
0121          0402 0002          SFLOT, FLP
0122          PMODE
0123          4403 7240          CLA CMA
0124          4404 4517          JMS I PLOTX
0125          4405 4531          JMS I LINE          /THIS SUBR DRAWS DATA
0126          4406 0000          0
0127          4407 0000          0
0130          4410 0003          3
0131          4411 0000          ANNO, 0
0132          4412 0000          CYCSYM, 0
0133          4413 4776          4776          /X LOC
0134          4414 6376          6376          /Y LOC
0135          4415 0000          CYCPNT, 0
0136          4416 0000          POINTS, 0
0137          4417 7201          CLA IAC
0140          4420 4517          JMS I PLOTX
0141          4421 0000          0
0142          4422 0000          0          /SETS 0,0
0143          4423 6141          LINC
0144          LMODE
0145          0424 0604          LIF 4
0146          0425 6020          JMP START1          /SADEF
0147          0426 0002          LEG, FLP
0150          PMODE
0151          4427 7240          CLA CMA
0152          4430 4517          JMS I PLOTX
0153          4431 4542          JMS I DSYM
0154          4432 0000          0
0155          4433 0000          0
0156          4434 0002          2
0157          4435 0000          LSYM, 0
0160          4436 4532          JMS I ALPHA
0161          4437 0024          24
0162          4440 7773          -5
0163          4441 0002          2

```





0164	4442	0000	ANOSTR, 0	
0165	4443	0000	0	
0166	4444	7201	CLA IAC	
0167	4445	4517	JMS I PLOTX	
0170	4446	0000	0	
0171	4447	7753	-25	
0172	4450	6141	LINC	
0173			LMODE	
0174	0451	0604	LIF 4	
0175	0452	6322	FPCORE, JMP START4	
0176			SEGMNT 4	
0177			*20	
0200	0020	7000	START1, JMP QAINIT	
0201	0021	0612	TXT6	/INTRO
0202	0022	0407	ANSWER	
0203	0023	7053	JMP QARF5H	
0204	0024	1300	LDH	
0205	0025	4407	4000+ANSWER	
0206	0026	1560	RCL I	
0207	0027	7770	7770	
0210	0030	0470	AZE I	
0211	0031	6042	JMP START2	/PLOT DATA
0212	0032	1120	ADA I	
0213	0033	7776	C1, -1	
0214	0034	0470	AZE I	
0215	0035	6320	JMP START3	/DRAW AXIS
0216	0036	2033	ADD C1	
0217	0037	0470	AZE I	
0220	0040	6322	JMP START4	/DRAW LEGEND
0221	0041	6020	JMP START1	/ERROR
0222	0042	1020	START2, LDA I	
0223	0043	3040	3040	
0224	0044	4371	STC TXTSTR+11	
0225	0045	7000	JMP QAINIT	
0226	0046	0360	TXTSTR	
0227	0047	0407	ANSWER	
0230	0050	7053	JMP QARF5H	
0231	0051	1300	LDH	
0232	0052	4407	4000+ANSWER	
0233	0053	1560	RCL I	
0234	0054	7770	7770	
0235	0055	0246	ROL 6	
0236	0056	4413	STC NUMB	
0237	0057	1300	LDH	
0240	0060	0410	1+ANSWER	
0241	0061	1560	RCL I	
0242	0062	7770	7770	
0243	0063	0243	ROL 3	
0244	0064	2413	ADD NUMB	
0245	0065	4413	STC NUMB	
0246	0066	1300	LDH	
0247	0067	4410	4001+ANSWER	
0250	0070	1560	RCL I	
0251	0071	7770	7770	



0252	0072	2413	ADD NUMB	
0253	0073	4415	STC XNUMB	
0254	0074	1300	LDH	
0255	0075	4411	4002+ANSWER	
0256	0076	1560	BCL I	
0257	0077	7776	7776	
0260	0100	4416	STC XUNIT	
0261	0101	1020	LDA I	
0262	0102	3140	3140	
0263	0103	4371	STC TXTSTR+11	
0264	0104	7000	STARTY, JMP QAINIT	
0265	0105	0360	TXTSTR	
0266	0106	0407	ANSWER	
0267	0107	7053	JMP QARF SH	
0270	0110	0011	CLR	
0271	0111	1300	LDH	
0272	0112	4407	4000+ANSWER	
0273	0113	1560	BCL I	
0274	0114	7770	7770	
0275	0115	0246	ROL 6	
0276	0116	4413	STC NUMB	
0277	0117	1300	LDH	
0300	0120	0410	1+ANSWER	
0301	0121	1560	BCL I	
0302	0122	7770	7770	
0303	0123	0243	ROL 3	
0304	0124	2413	ADD NUMB	
0305	0125	4413	STC NUMB	
0306	0126	1300	LDH	
0307	0127	4410	4001+ANSWER	
0310	0130	1560	BCL I	
0311	0131	7770	7770	
0312	0132	2413	ADD NUMB	
0313	0133	4417	STC YNUMB	
0314	0134	1300	LDH	
0315	0135	4411	4002+ANSWER	
0316	0136	1560	BCL I	
0317	0137	7776	7776	
0320	0140	4420	STC YUNIT	
0321	0141	0642	LDF 2	
0322	0142	7000	JMP QAINIT	/ANNOTATION
0323	0143	0421	TXT2	
0324	0144	0407	ANSWER	
0325	0145	7053	JMP QARF SH	
0326	0146	1300	LDH	
0327	0147	4407	4000+ANSWER	
0330	0150	1560	BCL I	
0331	0151	7770	7770	
0332	0152	1040	STA	
0333	0153	2411	ANNO-2000	
0334	0154	7000	JMP QAINIT	



0325	0155	0505		TXT3
0336	0156	0407		ANSWER
0337	0157	7053		JMP QARFSH
0340	0160	1300		LDH
0341	0161	4407		4000+ANSWER
0342	0162	1560		BCL I
0343	0163	7776		7776
0344	0164	0450		AZE
0345	0165	6171		JMP PENUP
0346	0166	1120		ADA I
0347	0167	0001		I
0350	0170	6173		JMP PENCUN
0351	0171	1020	PENUP,	LDA I
0352	0172	7777		7777
0353	0173	1040	PENCUN,	STA
0354	0174	2415		CYCPNT-2000
0355	0175	7000		JMP QAINIT
0356	0176	0541		TXT4
0357	0177	0407		ANSWER
0360	0200	7053		JMP QARFSH
0361	0201	1300		LDH
0362	0202	4407		4000+ANSWER
0363	0203	1560		BCL I
0364	0204	7770		7770
0365	0205	0243		ROL 3
0366	0206	1040		STA
0367	0207	2412		CYCSYM-2000
0370	0210	1300		LDH
0371	0211	0410		I+ANSWER
0372	0212	1560		BCL I
0373	0213	7770		7770
0374	0214	1100		ADA
0375	0215	2412		CYCSYM-2000
0376	0216	1040		STA
0377	0217	2412		CYCSYM-2000
0400	0220	7000		JMP QAINIT
0401	0221	0570		TXT5
0402	0222	0407		ANSWER
0403	0223	7053		JMP QARFSH
0404	0224	0067		SET I 7
0405	0225	7774		-3
0406	0226	0066		SET I 6
0407	0227	7775		-2
0410	0230	1020		LDA I
0411	0231	4775		4775
0412	0232	4250		STC XCORE
0413	0233	1000		LDA
0414	0234	0416		XUNIT
0415	0235	0243		ROL 3
0416	0236	1120		ADA I
0417	0237	0700		700
0420	0240	4252		STC RUNIT
0421	0241	1100		ADA
0422	0242	0415		XNUMB
0423	0243	4253		STC TBLK
0424	0244	1020		LDA I
0425	0245	0020		0020
0426	0246	0001		AXU



0427	0247	1020	L2,	LDA I	
0430	0250	0000	XCORE,	0	
0431	0251	0023		TMA	
0432	0252	0000	RUNIT,	0	
0433	0253	0000	TBLK,	0	
0434	0254	1000		LDA	
0435	0255	0250		XCORE	
0436	0256	1120		ADA I	
0437	0257	0400		400	
0440	0260	4250		STC XCORE	
0441	0261	0227		XSK I 7	
0442	0262	6264		JMP L3	
0443	0263	6272		JMP Y1	
0444	0264	1000	L3,	LDA	
0445	0265	0253		TBLK	
0446	0266	1120		ADA I	
0447	0267	0001		1	
0450	0270	4253		STC TBLK	
0451	0271	6247		JMP L2	
0452	0272	0226	Y1,	XSK I 6	
0453	0273	6275		JMP Y2	
0454	0274	6311		JMP PRO2	
0455	0275	0067	Y2,	SET I 7	
0456	0276	7774		-3	
0457	0277	1000		LDA	
0460	0300	0417		YNUMB	
0461	0301	4253		STC TBLK	
0462	0302	1000		LDA	
0463	0303	0420		YUNIT	
0464	0304	0243		ROL 3	
0465	0305	1120		ADA I	
0466	0306	0700		700	
0467	0307	4252		STC RUNIT	
0470	0310	6247		JMP L2	
0471	0311	0016	PRO2,	NOF	
0472	0312	1000		LDA	
0473	0313	2775		2775	
0474	0314	1040		STA	
0475	0315	2416		POINTS-2000	
0476	0316	0602		LIF 2	
0477	0317	6402		JMP SPLOT	
0500	0320	0602	START3,	LIF 2	
0501	0321	6520		JMP DAXIS	
0502	0322	0602	START4,	LDF 2	
0503	0323	7000		JMP QAINIT	
0504	0324	0421		TXT2	/SYMBOL
0505	0325	0407		ANSWER	
0506	0326	7053		JMP QARFSH	
0507	0327	1300		LDH	
0510	0330	4407		4000+ANSWER	
0511	0331	1560		BCL I	
0512	0332	7770		7770	
0513	0333	1040		STA	
0514	0334	2435		LSYM-2000	
0515	0335	7000		JMP QAINIT	
0516	0336	0730		TXT7	/WHICH TEXT
0517	0337	0407		ANSWER	
0520	0340	7053		JMP QARFSH	





0521	0341	1300	LDH	
0522	0342	4407	4000+ANSWER	
0523	0343	1560	BCL I	
0524	0344	7770	7770	
0525	0345	0243	ROL 3	
0526	0346	1120	ADA I	
0527	0347	4570	4570	
0530	0350	1040	STA	
0531	0351	2442	ANOSTR-2000	
0532	0352	7000	JMP QAINIT	
0533	0353	0570	TXT5	/SET PLOTTER
0534	0354	0407	ANSWER	
0535	0355	7053	JMP QARFSH	
0536	0356	0602	LIF 2	
0537	0357	6426	JMP LEG	
0540			/TEXTSTRINGS AND TEMP STORAGE FOLLOWS	
0541			NOLIST	

NO ERRORS

ALPHA	0132
ANNO	4411
ANOSTR	4442
ANSWER	0407
AXIS	0136
CYCPNT	4415
CYCSYM	4412
C1	0033
DAXIS	0520
DLTR	0143
DSYM	0142
ENDIT	0776
EPCORE	4452
LEG	4426
LINE	0131
LSYM	4435
L2	0247
L3	0264
NUMB	0413
NUMBER	0133
PENCON	0173
PENUP	0171
PLOTX	0117
POINTS	4416
PRO2	0311
QAINIT	1000
QARFSH	1053
RUNIT	0252
SPLIT	4402
STARTY	0104
START1	0020
START2	0042
START3	0320
START4	0322



TBLX 0253  
TXTSTR 0360  
TXT2 0421  
TXT3 0505  
TXT4 0541  
TXT5 0570  
TXT6 0612  
TXT7 0730  
UNIT 0414  
XCORE 0250  
XNUMP 0415  
XUNIT 0416  
YNUMP 0417  
YUNIT 0420  
Y1 0272  
Y2 0275



FOCAXIS

```

0000          *20
0001          AXIS=136
0002          PLOTX=117
0003          START1=20
0004          SEGMENT 2
0005          *520
0006          0520  0002  LAXIS, PDP
0007          PMODE
0010          4521  4536  JMS I AXIS      /Y AXIS
0011          4522  0000  YAXX0        /X START
0012          4523  0000  YAXY0        /Y START
0013          4524  0003  FACT
0014          4525  4671  YSTR

0015          4526  0001  1              /THETA
0016          4527  1130  YLENGTH
0017          4530  0001  YDANOT
0020          4531  0000  YMINANOT
0021          4532  0310  YDTIC
0022          4533  4536  JMS I AXIS
0023          4534  0000  XAXX0
0024          4535  0000  XAXY0
0025          4536  7775  -FACT
0026          4537  4661  XSTR
0027          4540  0000  0              /THETA
0030          4541  1130  XLENGTH
0031          4542  0001  XDANOT
0032          4543  0000  XMINANOT
0033          4544  0310  XDTIC
0034          4545  7201  CLA IAC
0035          4546  4517  JMS I PLOTX
0036          4547  0000  0
0037          4550  0000  0
0040          4551  6141  LINC
0041          LMODE

0042          0552  0604  LIF 4
0043          0553  0020  JMP START1
0044          /
0045          /

```

NO ERRORS



AXIS 0136  
DAXIS 4520  
FACT 0003  
PLOTX 0117  
START1 0020  
S1 4600  
S2 4610  
S3 4620  
S4 4630  
S5 4640  
S6 4650  
XAXX0 0000  
XAXY0 0000  
XLANOT 0001  
XDTIC 0310  
XLENGTH 1130  
XMINAN 0000  
XSTR 4661  
YAXX0 0000  
YAXY0 0000  
YLANOT 0001  
YDTIC 0310  
YLENGTH 1130  
YMINAN 0000  
YSTR 4671





FOCAXIS (continued)

1 LN=45

/FILL IN APPROPRIATE TEXT STRINGS  
/BETWEEN + SIGNS BELOW

PMODE  
\*4600  
S1, TEXT +LEG 1+  
\*4610  
S2, TEXT +LEG 2+  
\*4620  
S3, TEXT +LEG 3+  
\*4630  
S4, TEXT +LEG 4+  
\*4640  
S5, TEXT +LEG 5+  
\*4650  
S6, TEXT +LEG6+  
0  
XSTR, TEXT +X AXIS LABEL+  
0  
YSTR, TEXT +Y AXIS LABEL+  
0

/  
/  
/

DECIMAL

/  
/  
/

YAXX0=0 /X0 FOR Y AXIS  
YAXY0=0 /Y0 FOR Y AXIS  
XAXX0=0 /X0 FOR X AXIS  
XAXY0=0 /Y0 FOR X AXIS  
FACT=3 /LETTER SIZE  
YLNTH=600 /LENGTH Y IN 01S  
YDANOT=1 /CG ANNOT PER TIC  
YMINANOT=0 /MIN VAL ANNOT  
YDTIC=200 /01S BETWEEN TICS

/  
/

XLNTH=600 /LNTH X AXIS IN 01S  
XDANOT=1 /CG ANNOT PER TIC  
XMINANOT=0 /MIN VAL ANNOT  
XDTIC=200 /01S BETWEEN TICS

