

PCU COMMAND SUMMARY

xF97 Version 2.05-2.xx

0	00	NUL	ignored in sio			64	40	@	GPS Position, min	msg@_
1	01	SOH				65	41	A	absolute az	Adddd@_ *
2	02	STX				66	42	B	absolute hdg hard	Bdddd@_ *
3	03	ETX				67	43	C		
4	04	EOT				68	44	D	absolute hdg soft	Ddddd@_ *
5	05	ENQ				69	45	E	absolute el	Edddd@_ *
6	06	ACK				70	46	F		
7	07	BEL				71	47	G		
8	08	BS				72	48	H	read R H	H msg@_
9	09	HT				73	49	I	absolute CL	Idddd@_ *
10	0A	LF				74	4A	J	absolute rel	Jdddd@_ *
11	0B	VT				75	4B	K		
12	0C	FF				76	4C	L	echo msg=Ldddd	Ldddd@_ msg*_
13	0D	CR	cmd terminator	_		77	4D	M		
14	0E	SO				78	4E	N	set parameters	Ndddd@_ msg*_
15	0F	SI				79	4F	O	port e output	Ohhhh@_ *
16	10	DLE				80	50	P	read E A C	P msg@_
17	11	DC1				81	51	Q		
18	12	DC2				82	52	R		
19	13	DC3				83	53	S	read S (sio)	S msg@_
20	14	DC4				84	54	T		
21	15	NAK				85	55	U		
22	16	SYN				86	56	V	PCU version	V msg_
23	17	ETB				87	57	W		
24	18	CAN				88	58	X		
25	19	EM				89	59	Y		
26	1A	SUB				90	5A	Z	diag test start(res)	Znnnn@_ *
27	1B	ESC				91	5B	[		
28	1C	FS				92	5C	\		
29	1D	GS				93	5D	]		
30	1E	RS				94	5E	^	utility cmds	^dddd@_ *
31	1F	US	reserved for conscan pulse			95	5F	_		
32	20	sp				96	60	`		
33	21	!				97	61	a	incremental az	ai@_ *
34	22	"				98	62	b	incremental hdg	bi@_ *
35	23	#				99	63	c		
36	24	\$				100	64	d		
37	25	%				101	65	e	incremental el	ei@_ *
38	26	&	clear errors	&	*	102	66	f		
39	27	'				103	67	g	write pol	gdddd@_ *
40	28	(				104	68	h	write pwm	hdddd@_ *
41	29	)				105	69	i	differential CL	idddd@_ *
42	2A	*	reserved for positive command response			106	6A	j	differential LV	jddddd@_ *
43	2B	+	reset rc in sio	+		107	6B	k	differential AZ	kddddd@_ *
44	2C	,				108	6C	l	lumped CL,LV,AZ	
45	2D	-				109	6D	m		
46	2E	.				110	6E	n	same as N	
47	2F	/				111	6F	o		
48	30	0				112	70	p	read EAC in hex	p msg@_
49	31	1				113	71	q		
50	32	2	dec lvtrm ‡	2	*	114	72	r		
51	33	3				115	73	s		
52	34	4	dec cltrm ‡	4	*	116	74	t		
53	35	5	clr trms ‡	5	*	117	75	u	read Pol & aux	u msg@_
54	36	6	inc cltrm ‡	6	*	118	76	v	read references	v msg@_
55	37	7				119	77	w	read QRSs	w msg@_
56	38	8	inc lvtrm ‡	8	*	120	78	x	read IVCs	x msg@_
57	39	9				121	79	y	read TCs	y msg@_
58	3A	:				122	7A	z		
59	3B	;				123	7B	{		
60	3C	<	Modem Com BDE			124	7C			
61	3D	=	GPS position, .0000 min		msg@_	125	7D	}		
62	3E	>	Modem Com ADE			126	7E	~		
63	3F	?	reserved for negative command response			127	7F	DEL		

UTILITIES (.94)						
0	std mode	^0000				
C	Toggle DishScan	^0067				
F	Slow Scan	^0070				
G	Sat Reference	^0071				
V	Cksum off	^0086				
T	Test/Tilt mode	^0084				
W	NV write	^0087				
Z	Reset	^0090				
2	Trim Up	^0002				
4	Trim Left	^0004				
5	Trim Clear	^0005				
6	Trim Right	^0006				
8	Trim Down	^0008				
1nnn	CL DC torque	^1nnn				
2nnn	LV DC torque	^2nnn				
3nnn	AZ DC torque	^3nnn				
Checksum for ^0086 = Alt+0172 (0xAC)						
n / N PARAMETERS (.78) or (.110)						
n / N	Parameter	Format				
0	Stype	n0nnn	N0nnn			
1	CL Kp	n1nnn	N1nnn			
2	LV Kp	n2nnn	N2nnn			
3	AZ Kp	n3nnn	N3nnn			
4	CL trim	n4nnn	N4nnn			
5	LV trim	n5nnn	N5nnn			
6	HF trim	n6nnn	N6nnn			
7	DishScan	n7nnn	N7nnn			
8	Scan Rate	n8nnn	N8nnn			
9	Error Byte	n9nnn	N9nnn			
A/	System ID	nAnnn n:nnn	NAnnn N:nnn			
B/	Tim40S	nBnnn n:nnn	NBnnn N:nnn			
System	N0	N1	N2	N3	N7	Index
Size 23-Double Stack, 10:1 Reduction Az drive						
4096	65	100	62	50	21	1
4896	66	74	74	74	26	2
5696	67	74	74	74	25	3
4996	68	150	150	60	25	4
8897	133	50	50	50	214	5
9497	134	50	50	50	214	6
12097	135	50	50	50	193	7
14497	136	50	50	50	193	8
8797	137	40	40	40	214	9
9697	138	50	50	50	214	10
9797	139	50	50	50	214	11
9997	140	50	50	50	214	12
8897a	205	50	50	50	133	13
9497a	206	50	50	50	133	14
12097a	207	50	50	50	193	15
14400	208	71	71	71	214	16
8797a	209	50	50	50	133	17
9697a	210	50	50	50	133	18
9797a	211	50	50	50	133	19
14600	212	91	91	91	133	20
9597a	213	71	71	71	192	21
N7						
Phase		Drive	CL	AZ	EL	
-45	0	Max	0	0	0	
+0	64	1/2	16	4	1	
+45	128	1/4	32	8	2	
+90	192	1/8	48	12	3	

‡ enabled only in test mode

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Software Part Numbers

124702

125211

125438

125215

125213

125235

Application

F07

F97 / 97A

F97R / 97B

F97L

obsolete

F97t

obsolete

F97Rt

obsolete

Status word bit assignments

Bit	Word 1	Word2	Word 3
7	Spare	El Target	Spare
6	1		1
5	SlowScan	Az Target	Sensor Limit
4	Sat Ref	Spare	Stabilization Limit
3	DishScan	Hdg Valid	Az Reference Error
2	Unwrap	Error Flag	Az Torque Limit Error
1	Data in 3	Init	Lv Torque Limit Error
0	Data in 2	Hi Elevation	Cl Torque Limit Error

PCU COMMAND SUMMARY

xF97R Version 2.05-2.xx

0	00	NUL	ignored in sio			64	40	@	GPS position, min	msg@_	UTILITIES (.94)
1	01	SOH				65	41	A	absolute az	Adddd@_	0 std mode ^0000
2	02	STX				66	42	B	absolute hdg hard	Bdddd@_	C Toggle DishScan ^0067
3	03	ETX				67	43	C			F Slow Scan ^0070
4	04	EOT				68	44	D	absolute hdg soft	Ddddd@_	G Sat Reference ^0071
5	05	ENQ				69	45	E	absolute el	Edddd@_	V Cksum off ^0086
6	06	ACK				70	46	F			T Test/Tilt mode ^0084
7	07	BEL				71	47	G			W NV write ^0087
8	08	BS				72	48	H	read R H	H	Z Reset ^0090
9	09	HT				73	49	I	absolute CL	Idddd@_	2 Trim Up ^0002
10	0A	LF				74	4A	J	absolute rel	Jdddd@_	4 Trim Left ^0004
11	0B	VT				75	4B	K			5 Trim Clear ^0005
12	0C	FF				76	4C	L	echo msg=Ldddd	Ldddd@_	6 Trim Right ^0006
13	0D	CR	cmd terminator	_		77	4D	M			8 Trim Down ^0008
14	0E	SO				78	4E	N	set parameters	Ndddd@_	1nnn CL DC torque ^1nnn
15	0F	SI				79	4F	O	port e output	Ohhhh@_	2nnn LV DC torque ^2nnn
16	10	DLE				80	50	P	read E A C	P	3nnn AZ DC torque ^3nnn
17	11	DC1				81	51	Q			Checksum for ^0086 = Alt+0172 (0xAC)
18	12	DC2				82	52	R			
19	13	DC3				83	53	S	read S (sio)	S	n / N PARAMETERS (.78) or (.110)
20	14	DC4				84	54	T			n / N Parameter Format
21	15	NAK				85	55	U			0 Stype n0nnn N0nnn
22	16	SYN				86	56	V	PCU version	V	1 CL Kp n1nnn N1nnn
23	17	ETB				87	57	W			2 LV Kp n2nnn N2nnn
24	18	CAN				88	58	X			3 AZ Kp n3nnn N3nnn
25	19	EM				89	59	Y			4 CL trim n4nnn N4nnn
26	1A	SUB				90	5A	Z	diag test start(res)	Znnnn@_	5 LV trim n5nnn N5nnn
27	1B	ESC				91	5B	[			6 HF trim n6nnn N6nnn
28	1C	FS				92	5C	\			7 DishScan n7nnn N7nnn
29	1D	GS				93	5D	]			8 Scan Rate n8nnn N8nnn
30	1E	RS				94	5E	^	utility cmds	^dddd@_	9 Error Byte n9nnn N9nnn
31	1F	US	reserved for conscan pulse			95	5F	_			A/ System ID nAnnn n:nnn NAnnn N:nnn
											B/ Tim40S nBnnn n:nnn NBnnn N:nnn
32	20	sp				96	60	`			System N0 N1 N2 N3 N7 Index
33	21	!				97	61	a	incremental az	ai@_	Size 23-Double Stack, 10:1 Reduction Az drive
34	22	"				98	62	b	incremental hdg	bi@_	4096R 65 100 62 24 21 1
35	23	#				99	63	c			6003R 66 74 74 34 26 2
36	24	\$				100	64	d			5696R 67 74 74 34 25 3
37	25	%				101	65	e	incremental el	ei@_	4996R 68 150 150 30 25 4
38	26	&	clear errors	&	*	102	66	f			
39	27	'				103	67	g	write pol	gdddd@_	8897R 133 50 50 50 214 5
40	28	(				104	68	h	write pwm	hdddd@_	9497R 134 50 50 50 214 6
41	29	)				105	69	i	differential CL	idddd@_	12097R 135 50 50 50 193 7
42	2A	*	reserved for positive command response			106	6A	j	differential LV	jddddd@_	14497R 136 50 50 50 193 8
43	2B	+	reset rc in sio	+		107	6B	k	differential AZ	kddddd@_	8797R 137 40 40 40 214 9
44	2C	,				108	6C	l	lumped CL,LV,AZ		9697R 138 50 50 50 214 10
45	2D	-				109	6D	m			9797R 139 50 50 50 214 11
46	2E	.				110	6E	n	same as N		9997R 140 50 50 50 214 12
47	2F	/				111	6F	o			
48	30	0				112	70	p	read EAC in hex	p	8897b 205 50 50 50 133 13
49	31	1				113	71	q			9497b 206 50 50 50 133 14
50	32	2	dec lvtrm ‡	2	*	114	72	r			12097b 207 50 50 50 193 15
51	33	3				115	73	s			14400b 208 71 71 71 214 16
52	34	4	dec cltrm ‡	4	*	116	74	t			8797b 209 50 50 50 133 17
53	35	5	clr trms ‡	5	*	117	75	u	read Pol & aux	u	9697b 210 50 50 50 133 18
54	36	6	inc cltrm ‡	6	*	118	76	v	read references	v	9797b 211 50 50 50 133 19
55	37	7				119	77	w	read QRSs	w	14600b 212 91 91 91 133 20
56	38	8	inc lvtrm ‡	8	*	120	78	x	read IVCs	x	9597b 213 71 71 71 192 21
57	39	9				121	79	y	read TCs	y	
58	3A	:				122	7A	z			
59	3B	;				123	7B	{			
60	3C	<	Modem Com BDE			124	7C				
61	3D	=	GPS position, .0000 min		msg@_	125	7D	}			
62	3E	>	Modem Com ADE			126	7E	~			
63	3F	?	reserved for negative command response			127	7F	DEL			

‡ enabled only in test mode

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Status word bit assignments

Bit	Word 1	Word2	Word 3
7	Spare	El Target	Spare
6	1		1
5	SlowScan	Az Target	Sensor Limit
4	Sat Ref	Spare	Stabilization Limit
3	DishScan	Hdg Valid	Az Reference Error
2	Unwrap	Error Flag	Az Torque Limit Error
1	Data in 3	Init	Lv Torque Limit Error
0	Data in 2	Hi Elevation	Cl Torque Limit Error

Phase	Drive	CL	AZ	EL
-45	0	Max	0	0
+0	64	1/2	16	4
+45	128	1/4	32	8
+90	192	1/8	48	12

PCU COMMAND SUMMARY

xF07 Version 2.05-2.xx

0	00	NUL	ignored in sio			64	40	@	GPS position, min	msg@_	UTILITIES (.94)
1	01	SOH				65	41	A	absolute az	Adddd@_	0 std mode ^0000
2	02	STX				66	42	B	absolute hdg hard	Bdddd@_	C Toggle DishScan ^0067
3	03	ETX				67	43	C			F Slow Scan ^0070
4	04	EOT				68	44	D	absolute hdg soft	Ddddd@_	G Sat Reference ^0071
5	05	ENQ				69	45	E	absolute el	Edddd@_	V Cksum off ^0086
6	06	ACK				70	46	F			T Test/Tilt mode ^0084
7	07	BEL				71	47	G			W NV write ^0087
8	08	BS				72	48	H	read R H	H msg@_	Z Reset ^0090
9	09	HT				73	49	I	absolute CL	Idddd@_	2 Trim Up ^0002
10	0A	LF				74	4A	J	absolute rel	Jdddd@_	4 Trim Left ^0004
11	0B	VT				75	4B	K			5 Trim Clear ^0005
12	0C	FF				76	4C	L	echo msg=Ldddd	Lddddd@_	6 Trim Right ^0006
13	0D	CR	cmd terminator	_		77	4D	M		msg*_	8 Trim Down ^0008
14	0E	SO				78	4E	N	set parameters	Nddddd@_	1nnn CL DC torque ^1nnn
15	0F	SI				79	4F	O	port e output	Ohhhh@_	2nnn LV DC torque ^2nnn
16	10	DLE				80	50	P	read E A C	P msg@_	3nnn AZ DC torque ^3nnn
17	11	DC1				81	51	Q			Checksum for ^0086 = Alt+0172 (0xAC)
18	12	DC2				82	52	R			
19	13	DC3				83	53	S	read S (sio)	S msg@_	n / N PARAMETERS (.78) or (.110)
20	14	DC4				84	54	T			n / N Parameter Format
21	15	NAK				85	55	U			0 Stype n0nnn N0nnn
22	16	SYN				86	56	V	PCU version	V msg_	1 CL Kp n1nnn N1nnn
23	17	ETB				87	57	W			2 LV Kp n2nnn N2nnn
24	18	CAN				88	58	X			3 AZ Kp n3nnn N3nnn
25	19	EM				89	59	Y			4 CL trim n4nnn N4nnn
26	1A	SUB				90	5A	Z	diag test start(res)	Znnnn@_	5 LV trim n5nnn N5nnn
27	1B	ESC				91	5B	[			6 HF trim n6nnn N6nnn
28	1C	FS				92	5C	\			7 DishScan n7nnn N7nnn
29	1D	GS				93	5D	]			8 Scan Rate n8nnn N8nnn
30	1E	RS				94	5E	^	utility cmds	^ddddd@_	9 Error Byte n9nnn N9nnn
31	1F	US	reserved for conscan pulse			95	5F	_			A/ System ID nAnnn n:nnn NAnnn N:nnn
32	20	sp				96	60	`			B/ Tim40S nBnnn n:nnn NBnnn N:nnn
33	21	!				97	61	a	incremental az	ai@_	System N0 N1 N2 N3 N7 Index
34	22	"				98	62	b	incremental hdg	bi@_	Size 23-Double Stack, 10:1 Reduction Az drive
35	23	#				99	63	c			4096c 65 100 62 50 21 1
36	24	\$				100	64	d			4896c 66 74 74 74 26 2
37	25	%				101	65	e	incremental el	ei@_	5696c 67 74 74 74 25 3
38	26	&	clear errors	&	*	102	66	f			4996c 68 150 150 60 25 4
39	27	'				103	67	g	write pol	gddddd@_	8897c 133 50 50 50 214 5
40	28	(				104	68	h	write pwm	hddddd@_	9497c 134 50 50 50 214 6
41	29	)				105	69	i	differential CL	idddd@_	12097c 135 50 50 50 193 7
42	2A	*	reserved for positive command response			106	6A	j	differential LV	jddddd@_	14497c 136 50 50 50 193 8
43	2B	+	reset rc in sio	+		107	6B	k	differential AZ	kddddd@_	8797c 137 40 40 40 214 9
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45	2D	-				109	6D	m			9797c 139 50 50 50 214 11
46	2E	.				110	6E	n	same as N		9997c 140 50 50 50 214 12
47	2F	/				111	6F	o			
48	30	0				112	70	p	read EAC in hex	p msg@_	8807 205 50 50 50 133 13
49	31	1				113	71	q			9407 206 50 50 50 133 14
50	32	2	dec lvtrm ‡	2	*	114	72	r			12007 207 50 50 50 193 15
51	33	3				115	73	s			14407 208 71 71 71 214 16
52	34	4	dec cltrm ‡	4	*	116	74	t			8707 209 50 50 50 133 17
53	35	5	clr trms ‡	5	*	117	75	u	read Pol & aux	u msg@_	9607 210 50 50 50 133 18
54	36	6	inc cltrm ‡	6	*	118	76	v	read references	v msg@_	9707 211 50 50 50 133 19
55	37	7				119	77	w	read QRSs	w msg@_	14607 212 91 91 91 133 20
56	38	8	inc lvtrm ‡	8	*	120	78	x	read IVCs	x msg@_	9507 213 71 71 71 192 21
57	39	9				121	79	y	read TCs	y msg@_	
58	3A	:				122	7A	z			
59	3B	;				123	7B	{			
60	3C	<	Modem Com BDE			124	7C				
61	3D	=	GPS position, .0000 min		msg@_	125	7D	}			
62	3E	>	Modem Com ADE			126	7E	~			
63	3F	?	reserved for negative command response			127	7F	DEL			

‡ enabled only in test mode

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Status word bit assignments

Bit	Word 1	Word2	Word 3
7	Spare	El Target	Spare
6	1		1
5	SlowScan	Az Target	Sensor Limit
4	Sat Ref	Spare	Stabilization Limit
3	DishScan	Hdg Valid	Az Reference Error
2	Unwrap	Error Flag	Az Torque Limit Error
1	Data in 3	Init	Lv Torque Limit Error
0	Data in 2	Hi Elevation	Cl Torque Limit Error

Phase	Drive	CL	AZ	EL
-45	0	Max	0	0
+0	64	1/2	16	4
+45	128	1/4	32	8
+90	192	1/8	48	12