CONNECT SYSTEMS INCORPORATED

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FLEX SERIES UNIVERSAL CONTROLLER

User's Programming Manual

Made in U.S.A.

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SUMMARY

If you have a new system or you have a new version of the software, start out by setting everything back to factory default. This is accomplished by plugging a telephone in the programming jack of the Flex Series Controller and pressing the following keys on the telephone:

****123456****

For security reasons, this cannot be done over the air, over the telephone line, or thorough the computer interface.

To get into programming mode, press the following keys on the telephone:

##123456#

To program a parameter in the global section, use the following command:

***0000#nn#pppp#**

The "0000" indicates it's the global section, the "nn" is the line number as defined in the users manual, and the "pppp" is the parameter you want changed. If programming via a telephone plugged in the back of the Flex Series Controller, the front panel LCD display will indicate what is happening and give a description of any errors made.

Please see the rest of the manual for details of programming the rest of the system.

PROGRAMMING METHODS

This section on programming shows the different programming fields that are available across the many different FLEX SERIES UNIVERSAL CONTROLLER product lines. Not all these fields will be used in a particular product.

The FLEX SERIES UNIVERSAL CONTROLLERS can be programmed four different ways... Locally, remotely over the air, remotely from any touch tone phone, or through a computer. The computer programming will not be available in the near future. Not all products will support all methods of programming.

Local Programming: Simply plug any DTMF telephone set into the rear panel RJ-11 jack labeled "PROG". This allows the telephone keypad to act as a programming keyboard. The front panel display will show either the keystrokes or the results of the keystrokes.

DTMF Over the Air Programming: The FLEX SERIES UNIVERSAL CONTROLLERS can be programmed over the air from any DTMF equipped radio. A DTMF sequence is transponded in response to each command you enter and is used to display the results of your programming on our CD-2 or a special version of the Flex Series Controller.

Remote Dial Up Telephone Programming: Occasionally the FLEX SERIES UNIVERSAL CONTROLLER will be located out of radio range and over the air programming will not be possible. Simply dial up the paging terminal to do the programming. You can perform all the programming functions remotely that you can do locally. If the programming sequence is accepted, a DTMF sequence is transponded in response to each command you enter and is used to display the results on a special version of the Flex Series Controller. If the command entered is invalid, three beeps will be generated to tell the user a mistake has been made.

Computer Programming: This self contained program operating in the windows environment will allow the user to easily make changes to the characteristics of the FLEX SERIES UNIVERSAL CONTROLLER. This program is not expected to be released till something next year. This programming can be accomplished by using a laptop or other computer and plugging into the front panel plug or by attaching a modem into the back panel plug. If a modem is used, the unit can be programmed remotely.

TO ENTER AND EXIT PROGRAMMING MODE

To enter the programming mode, you must enter the programming mode access code. The access code consist of six digits plus two leading pound "##" characters and a trailing pound character. The factory default programming access code is 123456. The programming access code is always six digits in length. Therefore the code to

get into the programming mode is ##123456#. This code will be valid until you have changed the Programming Mode Access Code in the GLOBAL programming area.

When programming is completed, send ##### to exit the programming mode. If you forget, the FLEX SERIES UNIVERSAL CONTROLLER is designed is designed to self exit a few minutes after the last DTMF command.

GENERAL COMMAND SYNTAX

When programming, you will enter a programming sequence such as *0000#03#1#. All commands start with a "*" and end with a "#". There may be one or more additional "#" to act as a delimiter between fields.

Leading zeros: Data fields require that you enter the precise number of digits specified. Numbers that have fewer digits than the field requires can use leading zeros.

Resetting your position: If you are distracted or have a lapse and forget where you are in the middle of a command sequence, simply send * three times (***) and start the sequence over again.

All the fields can be displayed by the command *nnnn#nn*. The data followed by the # key is replaced by a single star. If system is being programmed by a telephone plugged into the back of the unit, the system will display the results on the internal LCD display. If the system is being programmed remotely by DTMF over the radio, then the DTMF string representing the field will be sent back over the radio. If the system is being programmed remotely by DTMF over the telephone, then the DTMF string representing the field will be sent back over the telephone. If the system is being programmed by a computer, then the results will be sent back over the RS232 connector located in the from and the back of the unit.

The programming of the system can be broken up into different areas. The first area which all products have is called the “Global Programming Area”. Depending on the product, different areas may be used such as the “Speed Calling Area” or the “Speed Dialing Area.” A summary of the different areas are described below.

Global Programming	*0000#nn#PPPP#
CTCSS Programming	*1mmm#nn#PPPP#
DCS Programming	*2mmm#nn#pppp#
LTR user ID Programming	*30mm#nn#pppp#
Speed Dialing	*40mm#nn#pppp#
Speed Calling	*5mmm#nn#pppp#
Push to Connect	*60mm#nn#pppp#
Voice Prompts	*7000#nn#pppp#
LTR Repeater	*80nn#nn#pppp#

DIFFERENT PROGRAMMING AREAS

GLOBAL PROGRAMMING AREA

The global programming area is used to program parameters that is common to the entire product. All Global Programming commands start with *0000#. An example is *0000#01#J#

CTCSS PROGRAMMING AREA

The CTCSS programming area is used to program parameters where the CTCSS tone is of importance. As an example, the command *1067#04#1# is used to turn on user with a tone of 67 hertz.

The general form of this area is *1nnn#... where the 1 indicates the area is CTCSS and the nnn corresponds to a valid CTCSS number as shown in table 2. If the nnn has a value of 999, then gang programming is used and the 51 different CTCSS users will have the same value programmed.

As an example, if you want to turn off all the CTCSS users, use the command *1999#04#0#. The 1 indicates it’s a CTCSS field, the 999 indicates it’s a gang programming command, the 04 indicates its an enable/disable user field, and the 0 indicates the user should be disabled.

DCS PROGRAMMING AREA

The DCS programming area is used to program parameters where the DCS code is of importance. As an example, the command *2023#04#1# is used to turn on user with a code of 023.

The general form of this area is *2nnn#... where the 2 indicates the area is DCS and the nnn corresponds to a valid DCS number as shown in table 3. If the nnn has a value of 999, then gang programming is used and the 112 different DCS users will have the same value programmed.

As an example, if you want to turn off all the DCS users, use the command *2999#04#0#. The 2 indicates it’s a DCS field, the 999 indicates it’s a gang programming command, the 04 indicates its an enable/disable user field, and the 0 indicates the user should be disabled.

LTR USER ID PROGRAMMING AREA

The LTR USER ID programming area is used to program parameters where the LTR ID number and repeater number is of importance. As an example, the command *3015#246#04#1# is used to turn on user with a repeater number of 15 and a ID number of 246.

The general form of this area is *30nn#iii#... where the 30 indicates the area is LTR and the nn corresponds to a valid repeater number and iii is the ID number.

A valid repeater number has to be between 01 and 20 and a valid ID number has to be between 001 and 250. Leading zeros must be used for the repeater number and optionally for the ID number.

If the iii has a value of 999, then gang programming is used and the 250 different ID numbers for the repeater selected will have the same value programmed.

SPEED DIAL NUMBER AREA

The speed dial number area is used to program parameters relating to speed dialing. As an example, the speed dial number. In a normal phone patch operation, only the speed dial number is used. However, if wide area networking is desirable, then other parameters may be necessary.

The general form of this area is *40nn#... where the 40 indicates the area is speed dialing and the nn corresponds to the speed dial number position in memory. As an example, 4000 would indicate the first speed dial number position and 4010 would indicate the eleventh speed dial number position. If the 40nn is replaced by 4999, then gang programming is used and all 100 different speed dial number positions will have the same value programmed.

SPEED CALL NUMBER AREA

The speed call number area is used to program parameters relating to paging. Typically, the only parameter in the speed call number is the paging number. This allows a user to enter a number from 0000 to 9999 and the paging corresponding to that user will be generated. See pager number fields below for a more detailed description.

The general form of this area is *5nnn#... where the 5 indicates the area is speed call and the nnn corresponds to the speed call number position. As an example, 5000 would indicate the first speed call number position and 5010 would indicate the eleventh speed call number position. If the 5nnn is replaced by 5999, then gang programming is used and all 999 different speed call number positions will have the same value programmed.

PUSH TO CONNECT USERS AREA

The push to connect users area is used to automatically connect different sites in a wide area network. This will be able to be used in conventional as well as LTR controllers.

The general form of this area is *60nn#... where the 60 indicate the area is for push to connect users and the nn corresponds to the push to connect users position. As an example, 6000 would indicate the first push to connect users position and 6010 would indicate the eleventh push to connect users position. If the 60nn is replaced by 6999, then gang programming is used and all 100 positions will be changed to the same value at the same time.

VOICE PROMPT AREA

The voice prompt area is used to enter a voice message. This area is active in all products but not all products use the voice prompt capability.

For recording, the format used is *7000#n#0#. The value n corresponds to one of the eight voice memory locations whose maximum record time is as follows:

N	Maximum Record Time
0	9 seconds
1	9 seconds
2	9 seconds
3	9 seconds
4	9 seconds
5	25 seconds
6	25 seconds
7	25 seconds

The total record time for this product is two minutes.

To play back, use the command *7000#n*

When recording, the system will stop recording either when the maximum time has been reached or the user enters any DTMF key.

REPEATER AREA

This area is used when there are multiple repeaters in a system and all of the programming has to be done from a single repeater.

The general form of this area is *80RR#... where the 80 indicate the area is for repeater parameters and the RR corresponds to the repeater number from 1 to 20. As an example, 8001 would indicate the first repeater and 8010 would indicate the tenth repeater. If the 80RR is replaced by 8999, then gang programming is used and all 20 different repeaters will have the same value programmed.

DIFFERENT TYPES OF PROGRAMMING FIELDS

BINARY FIELDS

If the field is in the form of *nnnn#nn#J# such as the TELCO PROGRAMMING field which is *0000#01#J#, then the user must enter the value of 0 or 1 for the field. Any other number will be rejected. In most cases, J = 0 means disable the function and J = 1 means enable the function.

STRING FIELDS

If the field is in the form of *nnnn#nn#N..NN# such as the PROGRAMMING MODE ACCESS CODE field which is *0000#05#NNNNNN#, then the user must enter in a number for each of the characters. Some fields require all the numbers to be entered and some fields may only require one or more characters to be entered.

NUMERIC FIELDS

If the field is in the form of *nnnn#nn#MMM# such as the TURN ON DELAY field which is *0000#08#MM# or the DTMF TELCO LEVEL field which is *0000#11#MMM#, then the user must enter anywhere from one to three characters, depending on the field and the value must be in the range specified. Some fields allow a range of values and also the value of zero. There is no need for leading zeros.

CTCSS/DCS FIELDS

If the field is in the form of *nnnn#nn#PMMM# such as the CTCSS/DCS CROSS TONE which is *1NNN#06#PMMM#, then the user must enter a valid CTCSS code or a valid DCS code. If P is 1, then MMM is the valid CTCSS code and if P is 2, then MMM is the valid DCS code. The valid codes are shown in the table under paging parameters.

LTR FIELDS

If the field is in the form of *nnnn#nn#RRIII# such as the LTR CROSS TONE which is *1NNN#07#RRIII#, then the user must enter a valid LTR repeater number and ID code. The repeater number is between 1 and 20 and the ID number is between 001 and 250.

TELEPHONE FIELD

If the field is in the form of *nnnn#nn#tt...t#, then the system is expecting a telephone number. Telephone numbers can have the following numbers and symbols:

0	5	*	D
1	6	#	W
2	7	A	+
3	8	B	(
4	9	C	)

The "W" key is used for wait for dial tone. The "+" key is used for delay 3 seconds, and the "(" and ")" keys are used to delimit the telephone number to make it easier to read and has no effect on the dialing.

If you use a standard telephone keypad, the numbers and symbols are derived as follows:

0	press the 0 key
1	press the 1 key
2	press the 2 key
3	press the 3 key
4	press the 4 key
5	press the 5 key
6	press the 6 key
7	press the 7 key
8	press the 8 key
9	press the 9 key
*	press the 1 key for at least 3 seconds
#	press the 2 key for at least 3 seconds
A	press the 3 key for at least 3 seconds
B	press the 4 key for at least 3 seconds
C	press the 5 key for at least 3 seconds
D	press the 6 key for at least 3 seconds
W	press the 7 key for at least 3 seconds
+	press the 8 key for at least 3 seconds
(	press the 9 key for at least 3 seconds
)	press the 0 key for at least 3 seconds

If you have a keypad with the letters A – D, then those keys will generate A – D no matter how long or how short you hold down the key. The keys "*" and "#" will act for as control functions no matter how long or short you hold down the keys.

A- D will generate DTMF tones A – D.

CWID FIELD

Certain fields such as fields that require the user to enter in CWID characters or names require letters and numbers. Being that the telephone has only 10 numbers, a method has to be used to accommodate all the letters, special characters, and numbers with only ten numeric keys. This is accomplished by pressing two numeric keys for each letter. As the user enters the second key, the display will show the equivalent letter, special character, or number. The table to accomplish this is shown below.

CHAR	VALUE	CHAR	VALUE	CHAR	VALUE	CHAR	VALUE
A	00	Z	25	y	50	-	75
B	01	a	26	z	51	+	76
C	02	b	27	0	52	=	77
D	03	c	28	1	53	{	78
E	04	d	29	2	54	}	79
F	05	e	30	3	55	[	80
G	06	f	31	4	56	]	81
H	07	g	32	5	57	|	82
I	08	h	33	6	58	;	83
J	09	i	34	7	59	:	84
K	10	j	35	8	60	<	85
L	11	k	36	9	61	>	86
M	12	l	37	`	62	,	87
N	13	m	38	~	63	.	88
O	14	n	39	!	64	?	89
P	14	o	40	@	65	/	90
Q	16	p	41	#	66	sp	91
R	17	q	42	$	67	sp	92
S	18	r	43	%	68	sp	93
T	19	s	44	^	69	sp	94
U	20	t	45	&	70	sp	95
V	21	u	46	*	71	sp	96
W	22	v	47	(	72	sp	97
X	23	w	48	)	73	sp	98
Y	24	x	49	_	74	sp	99

TABLE 1

PAGING FIELDS

CTCSS PAGING

This paging terminal supports 51 CTCSS Tones. Table 2 shows the tone supported and the value the user must enter when using the tone. There are 38 standard EIA tones. If there is a star by the tone, then that tone is non standard.

Once the CTCSS page is activated, the CTCSS will be transmitted continuously until the CTCSS/DCS timer has timed out. If the CTCSS/DCS timer is set to zero, then the timer is disabled and the CTCSS will be transmitted continuously until some other page is set off.

The paging sequence for CTCSS is as follows:

*5nnn#01#01 m cccc uuu a#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

uuu is the CTCSS tone as defined in the table below

a is the alerting beeps as follows:

a = 0 beeps
a = 1 ringing sound

TABLE OF CTCSS TONES AND THE CORRESPONDING USER VALUES

CTCSS TONE	USER VALUE	CTCSS TONE	USER VALUE
63.0 *	630	156.7	156
67.0	670	159.8 *	159
69.4 *	694	162.2	162
71.9	719	165.5 *	165
74.4	744	167.9	167
77.0	770	171.3 *	171
79.7	797	173.8	173
82.5	825	177.3 *	177
85.4	854	179.9	179
88.5	885	183.5 *	183
91.5	915	186.2	186
94.8	948	189.9 *	189
97.4	974	192.8	192
100.0	100	196.6 *	196
103.5	103	199.5 *	199
107.2	107	203.5	203
110.9	110	206.5 *	206
114.8	114	210.7	210
118.8	118	218.1	218
123.0	123	225.7	225
131.8	131	229.1 *	229
136.5	136	233.6	233
141.3	141	241.8	241
146.2	146	250.3	250
151.4	151	254.1 *	254

TABLE 2

* non standard tones

DCS PAGING

This paging terminal supports 112 DCS Codes. Table 3 shows the Codes supported and the value the user must enter when using the Code. A star indicates non standard code.

Once the DCS page is activated, the DCS will be transmitted continuously until the DCS timer has timed out. If the DCS timer is set to zero, then the timer is disabled and the DCS will be transmitted continuously until some other page is set off.

The paging sequence for DCS is as follows:

*5nnn#01#02 m cccc uuu a#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

uuu is the DCS code as defined in the table below

a is the alerting beeps as follows:

a = 0 beeps
a = 1 ringing sound

Every DCS code has a corresponding inverse code. The DCS input and output polarities must be separately programmed to allow for receiver and transmitter inversions respectively. Table 4 shows the normal and inverse codes

TABLE OF DCS CODES

DCS CODE	DCS CODE	DCS CODE
006 *	172	431
007 *	174	432
015 *	205	445
017 *	212 *	446 *
021 *	214 *	452 *
023	223	454 *
025	225 *	455 *
026	226	462 *
031	243	464
032	244	465
036 *	245	466
043	246 *	503
047	251	506
050 *	252 *	516
051	255 *	523 *
053 *	261	526 *
054	263	532
065	265	546
071	266 *	565
072	271	606
073	274 *	612
074	306	624
114	311	627
115	315	631
116	325 *	632
122 *	331	654
125	332 *	662
131	343	664
132	346	703
134	351	712
141 *	356 *	723
143	364	731
145 *	365	732
152	371	734
155	411	743
156	412	754
162	413	
165	423	

TABLE 3

* non standard codes

NORMAL / INVERSE DCS CODES

DCS	INVERSE	DCS	INVERSE	DCS	INVERSE
006	021	172	036	431	723
007	214	174	074	432	516
015	141	205	263	445	043
017	050	212	356	446	255
021	006	214	007	452	053
023	047	223	134	454	266
025	244	225	122	455	332
026	464	226	411	462	252
031	627	243	351	464	026
032	051	244	025	465	331
036	172	245	072	466	662
043	445	246	523	503	162
047	023	251	165	506	073
050	017	252	462	516	432
051	032	255	446	523	246
053	452	261	732	526	325
054	413	263	205	532	343
065	271	265	156	546	132
071	306	266	454	565	703
072	245	271	065	606	631
073	506	274	145	612	346
074	174	306	071	624	632
114	712	311	664	627	031
115	152	315	423	631	606
116	754	325	526	632	624
122	225	331	465	654	743
125	365	332	455	662	466
131	364	343	532	664	311
132	546	346	612	703	565
134	223	351	243	712	114
141	015	356	212	723	431
143	412	364	131	731	155
145	274	365	125	732	261
152	115	371	734	734	371
155	731	411	226	743	654
156	265	412	143	754	116
162	503	413	054		
165	251	423	315		

TABLE 4

DTMF PAGING

This paging terminal supports all 16 DTMF Tones. Table 5 shows the DTMF code and the corresponding tone pair.

DTMF or Dual Tone Multiple Frequencies is typically used to set off horn honkers or page radios. DTMF can consist of anywhere from 1 to eight DTMF characters.

A DTMF tone consist of a high tone and a low tone transmitted simultaneously as shown in table 5. The typical timing of DTMF is 100 milliseconds per tone. That requires the tone to be active for 60 milliseconds and inactive for 40 milliseconds. User specifies actual timing for this paging terminal.

The paging sequence for DTMF is as follows:

*5nnn#01#03 m cccc uu..u#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

uu..u is the DTMF code as defined in the table below and can be between 1 and 8 characters.

DTMF TONE	LOW TONE	HIGH TONE
1	697	1209
2	697	1336
3	697	1477
4	770	1209
5	770	1336
6	770	1477
7	852	1209
8	852	1336
9	852	1477
0	941	1336
*	941	1209
#	941	1477
A	697	1633
B	770	1633
C	852	1633
D	941	1633

TABLE 5

MOTOROLA TWO TONE PAGING

This paging terminal supports the "Motorola Quick Call 2 One Plus One" and the "Motorola Extended Code Plan".

Motorola Quick Call 2 One Plus One works by sending two tones, one right after each other. The tones used are shown in Table 6. The first tone is transmitted for 1 second followed by the second tone transmitted for 3 seconds. There is no gap between the tones.

The paging sequence for this two tone sequence is as follows:

*5nnn#01#04 m cccc column row column row#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

column row column row generates the frequency per the two tone table shown below.

If the first column and row is equal to the second column and row then the system generates a group call.

A group call in this format requires a single tone to be transmitted for 8 seconds.

TWO TONE GROUP SELECTION TABLE								
Tone Sel #	Mot GP1 0	Mot GP2 1	Mot GP3 2	Mot GP4 3	Mot GP5 4	MOT GP6 5	MOT GP10 6	MOT GP11 7
0	330.5	569.1	1092.4	321.7	553.9	1122.5	1472.9	1930.2
1	349.0	600.9	288.5	339.6	584.8	1153.4	1513.5	1989.0
2	368.5	634.5	296.5	358.6	617.4	1185.2	1555.2	2043.6
3	389.0	669.9	304.7	378.6	651.9	1217.8	1598.0	2034.5
4	410.8	707.3	313.0	399.8	688.3	1251.4	1642.0	2155.6
5	433.7	746.8	953.7	422.1	726.8	1285.8	1687.2	2212.2
6	457.9	788.5	979.9	445.7	767.4	1321.2	1733.7	2271.7
7	483.5	832.5	1006.9	470.5	810.2	1357.6	1781.5	2334.6
8	510.5	879.0	1034.7	496.8	855.5	1395.0	1830.5	2401.0
9	539.0	928.1	1063.2	524.6	903.2	1433.4	1881.0	2468.2

TABLE 6

GENERAL ELECTRIC TWO TONE PAGING

This paging terminal supports the "General Electric Type 99 Table 1" and "General Electric Type 99 Table 2".

General Electric Type 99 works by sending two tones, one right after each other. The tones used are shown in Table 7. The first tone is transmitted for 1 second followed by the second tone transmitted for 1.5 seconds. There is no gap between the tones.

The paging sequence for this two tone page is as follows:

*5nnn#01#05 m cccc column row column row#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

column row column row generates the frequency per the two tone table shown below.

If the first column and row is equal to the second column and row then the system generates a diagonal call.

A diagonal call in this format requires a single tone to be transmitted for 1 second followed by the diagonal tone of 742.5 Hz for 1.5 seconds. The following sequence is used:

GENERAL ELECTRIC TYPE 99			
Tone Sel #	GE GPA 0	GE GPB 1	GE GPC 2
0	682.5	652.5	667.5
1	592.5	607.5	712.5
2	757.5	787.5	772.5
3	802.5	832.5	817.5
4	847.5	877.5	862.5
5	892.5	922.5	907.5
6	937.5	967.5	952.5
7	547.5	517.5	532.5
8	727.5	562.5	577.5
9	637.5	697.5	622.5

TABLE 7

AVCALL OR SELCALL PAGING

This paging terminal supports AVCALL or SELCALL.

AVCALL or SELCALL is typically used to page an aircraft. This format was developed in the late sixties as a means of identifying aircraft automatically.

AVCALL or SELCALL works by sending two sets of two pairs of tones, one right after each other. The tones used are shown in Table 8. The first pair of tones is transmitted for 1250 milliseconds followed by a gap of no tones for 200 milliseconds followed by the second pair of tones transmitted for 1000 milliseconds.

The paging sequence for this page is as follows:

*5nnn#01#06 m cccc column row, column row, column row, column row#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page
cccc is the paging number that the user will enter to access this page.

column row column row generates the two frequency per the AVCALL or SELCAL table shown below.

AVCALL OR SELCALL				
Tone Sel #	AVCALL SELCAL 0		AVCALL SELCAL 1	
0	A	312.6	J	716.1
1	B	346.7	K	794.3
2	C	384.6	L	881.0
3	D	426.7	M	977.2
4	E	473.2	P	1083.9
5	F	524.8	Q	1202.3
6	G	582.1	R	1333.5
7	H	645.7	S	1479.1
8		0		0
9		0		0

TABLE 8

MOTOROLA QUICK CALL 1 TWO PLUS TWO OR CODE TYPE Y PAGING

This paging terminal supports the Motorola Quick Call 1 Two Plus Two or Code Type Y.

Motorola Quick Call 1 Two Plus Two works by sending two sets of two pairs of tones, one right after each other. The tones used are shown in Table 9. The first pair of tones is transmitted for 1000 milliseconds followed by a gap of no tones for 200 milliseconds followed by the second pair of tones transmitted for 1000 milliseconds.

The paging sequence for this page is as follows:

*5nnn#01#07 m cccc column row, column row, column row, column row#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

column row column row generates the frequency per the two tone table shown below.

A group call in this format requires two tones to be simultaneously transmitted for four seconds. To generate a group call, the first two sets of tones must be equal to the second two sets of tones.

MOTOROLA DUAL TONE FORMATS				
Tone Sel #	MOT GPA 0	MOT GPB 1	MOT GPC 2	MOT MISC 3
0	398.1	412.1	384.6	1011.6
1	441.6	457.1	426.6	1122.1
2	489.8	507.0	473.2	1047.1
3	543.3	562.3	524.8	1161.4
4	602.6	623.7	582.1	977.2
5	668.3	691.8	645.7	1084.0
6	741.3	767.4	716.7	0
7	822.2	851.1	794.3	0
8	912.0	944.1	881.0	0
9	358.9	371.5	346.7	0

TABLE 9

ZVEI1 AND PZVEI 5 TONE PAGING

This paging terminal supports the ZVEI1 and PZVEI 5 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 70 ms and the gap between sequences of 150 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#08 m cccc T1,T2,T3,T4,T5#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5 are the five tones that will be generated. If less than five numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	ZVEI1 PZVEI
0	2400
1	1060
2	1160
3	1270
4	1400
5	1530
6	1670
7	1830
8	2000
9	2200
REPT	2600

TABLE 10

ZVEI2 5 TONE PAGING

This paging terminal supports the ZVEI2 5 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 70 ms and the gap between sequences of 150 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#09 m cccc T1,T2,T3,T4,T5#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5 are the five tones that will be generated. If less than five numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	ZVEI2
0	2400
1	1060
2	1160
3	1270
4	1400
5	1530
6	1670
7	1830
8	2000
9	2200
REPT	970

TABLE 11

ZVEI3,DZVEI, AND PDZVEI 5 TONE PAGING

This paging terminal supports the ZVEI3, DZVEI and PDZVEI 5 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 70 ms and the gap between sequences of 150 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#10 m cccc T1,T2,T3,T4,T5#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5 are the five tones that will be generated. If less than five numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	ZVEI3 DZVEI PDZVEI
0	2200
1	970
2	1060
3	1160
4	1270
5	1400
6	1530
7	1670
8	1830
9	2000
REPT	2400

TABLE 12

CCIR1 AND PCCIR 5 TONE PAGING

This paging terminal supports the CCIR1 and PCCIR 5 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 100 ms and the gap between sequences of 290 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#11 m cccc T1,T2,T3,T4,T5#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5 are the five tones that will be generated. If less than five numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	CCIR1 PCCIR
0	1981
1	1124
2	1197
3	1275
4	1358
5	1446
6	1540
7	1640
8	1747
9	1860
REPT	2110

TABLE 13

CCIR2 5 TONE PAGING

This paging terminal supports the CCIR2 5 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 70 ms and the gap between sequences of 290 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#12 m cccc T1,T2,T3,T4,T5#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5 are the five tones that will be generated. If less than five numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	CCIR2
0	1981
1	1124
2	1197
3	1275
4	1358
5	1446
6	1540
7	1640
8	1747
9	1860
REPT	2110

TABLE 14

EEA 5 TONE PAGING

This paging terminal supports the EEA 5 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 40 ms and the gap between sequences of 100 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#13 m cccc T1,T2,T3,T4,T5#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5 are the five tones that will be generated. If less than five numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	EEA
0	1981
1	1124
2	1197
3	1275
4	1358
5	1446
6	1540
7	1640
8	1747
9	1860
REPT	2110

TABLE 15

EURO SIGNAL 6/7 TONE PAGING

This paging terminal supports the EURO SIGNAL 6/7 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 100 ms and the gap between sequences of 300 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#14 m cccc T1,T2,T3,T4,T5,T6,T7#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5,T6,T7 are the seven tones that will be generated. If less than seven numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	EURO SIGNAL
0	979.8
1	903.1
2	832.5
3	767.4
4	707.4
5	652.0
6	601.0
7	554.0
8	510.7
9	470.8
REPT	1062.9

TABLE 16

NATEL 5 TONE PAGING

This paging terminal supports the NATEL 5 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 70 ms and the gap between sequences of 300 ms. There is no gap between tones.

*5nnn#01#15 m cccc T1,T2,T3,T4,T5#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5 are the five tones that will be generated. If less than five numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	NATEL
0	1633
1	631
2	697
3	770
4	852
5	941
6	1040
7	1209
8	1336
9	1477
REPT	1805

TABLE 17

EIA 5/6 TONE PAGING

This paging terminal supports the EIA 5/6 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 33 ms and the gap between sequences of 100 ms. There is no gap between tones.

*5nnn#01#16 m cccc T1,T2,T3,T4,T5,T6#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5,T6 are the six tones that will be generated. If less than six numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	EIA
0	600
1	741
2	882
3	1023
4	1164
5	1305
6	1446
7	1587
8	1728
9	1869
REPT	459

TABLE 18

MODAT 7 TONE PAGING

This paging terminal supports the MODAT 7 tone format. This format works by sending the various tones one right after each other. If two of the adjacent tones are the same, then the second duplicate is replaced by the repeat tone. The tone width is 40 ms and the gap between sequences of 300 ms. There is no gap between tones.

The paging sequence for this page is as follows:

*5nnn#01#17 m cccc T1,T2,T3,T4,T5,T6,T7#

m is the mode as follows:

m = 0 paging only
m = 1 talk after page
m = 2 go into talk cycle after page
m = 3 wait for * or * + access code after page

cccc is the paging number that the user will enter to access this page.

T1,T2,T3,T4,T5,T6,T7 are the seven tones that will be generated. If less than seven numbers are put in, then only those numbered entered will be generated.

The number of times the sequence is repeated is defined in the global parameters.

Tone Sel #	MODAT
0	637.5
1	787.5
2	937.5
3	1087.5
4	1237.5
5	1387.5
6	1537.5
7	1687.5
8	1837.5
9	1987.5
REPT	487.5

TABLE 19

REVISION HISTORY

July 6, 2003 First Release