Tower Controller Mark II CV Listing Revision 3

CV#	Name	7	6	5	4	3	2	1	0	Comments
CV1										
CV2										
CV3										
CV4										
CV5										
CV6										
CV7	MFG firmware Version number	0	0	0	0	0	0	0	1	Some new # here
CV8	MFG ID 87	0	1	0	1	0	1	1	1	
CV9	MFG Hardware ID	0	0	0	1	1	0	0	0	24 = TowerMan 64
10-16	NMRA Reserved									
CV17	Decoder Address MSB	1	1	h	h	h	h	h	h	Programming address MSB
CV18	Decoder Address LSB	a	a	a	a	a	a	a	a	Programming address LSB
19-27	NMRA Reserved									
CV28	Bi-directional Configuration	r	r	r	r	r	r	na	0	r=NMRA reserved
CV29	Accessory Decoder Configuration	1	1	1	r	0	r	r	r	r=NMRA reserved
CV30	NMRA Reserved									
CV31	Index Address High Byte	0	0	0	1	0	0	0	0	Mfg. pages - Fixed value
CV32	Index Address Low Byte	0	0	0	0	0	0	0	i	i=Index to 1st and 2nd pages
33-81	Manufacturer Unique = 48 bytes									
	Unused									
65-81	16 Unused									
82-111	NMRA Reserved = 29 bytes									
112-128	Manufacturer Unique = 16 bytes									
CV112	Configuration Options	m	x	x	so	si	g	o	p	Same as TC-64 (CV19) p = 1 - Port State Enabled o = 1 - OPS mode enabled g = 1 - GPON interrogate si = 1 - Sensor Interrogate so = 1 - Output Interrogate m = 1 – Master mode
CV113	Flash Rewrite LSB	F	F	F	F	F	F	F	F	Total number of flash memory writes. (writes are done on power down to save aspect states through DCC power glitches)
CV114	Flash Rewrite Middle Bits	F	F	F	F	F	F	F	F	
CV115	Flash Rewrite MSB	F	F	F	F	F	F	F	F	

CV116	Stepper Mode Enable	29-32	25-28	21-24	17-20	13-16	9-12	5-8	1-4	Line bit set = enable
CV117	Stepper Mode Enable	61-64	57-60	53-56	49-52	45-48	41-44	37-40	33-36	Line bit set = enable

118-120	3 Unused

8 Unused

129-640	Manufacturer Unique 512 bytes

Input/Output Control = 512 bytes

Input/Output Control bits:
aaaaaaaa = Low Address,
t s mm hhhh
t = paired
s = Signal (output only)
mm = mode
00 - Switch Request
01 - Switch Feedback
10 - Sensor Message
11 - Reserved
hhhh = Hi Address, Factory Default = 0
d D- s2s2 - s1s1 - tt
d = Output Direction normal/inverted
D = In/Out info for each line
ss = Secondary transition control
00 - No Second Message
01 - on Positive Edge
10 - on Negative Edge
11 - on Both Transitions
tt = Primary transition control
00 - No Primary Message
01 - on Positive Edge
10 - on Negative Edge
11 - on Both Transitions
i - ttt - TTTT
i = Trigger 0 - normal 1 - inverted
ttt = Output type
000 - Short Pulse / Input debounce time
001 - Long Pulse
010 - Short Blink / Input toggle 'on' time
011 - Long Blink
100 - Reserved
101 - Reserved
110 - Reserved
111 - Reserved
TTTT = Timing Same set as TC-64
Sec #1 and #2
aaaaaaaa = lo address bits
d - p - tt - hhhh
d Inverted

	10 - Respond Normal 11 - Respond Inverted hhhh=hid=direction p=polarity tt=type, 00 - Send Normal 01 - Sen add								
I/O #1 I/O control words									
CV129	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV130	t=alt/precision, s=Sig, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV131	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV132	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV133	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV134	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV135	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV136	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #2 I/O control words									
CV137	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV138	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV139	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV140	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV141	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV142	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV143	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV144	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #3 I/O control words									
CV145	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV146	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV147	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV148	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV149	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV150	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV151	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV152	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"

	I/O #4 I/O control words									
CV153	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV154	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV155	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV156	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV157	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV158	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV159	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV160	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
	I/O #5 I/O control words									
CV161	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV162	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV163	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV164	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV165	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV166	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV167	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV168	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
	I/O #6 I/O control words									
CV169	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV170	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV171	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV172	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV173	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV174	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV175	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV176	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
	I/O #7 I/O control words									
CV177	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV178	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV179	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV180	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control

CV181	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV182	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV183	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV184	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #8 I/O control words										
CV185	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV186	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV187	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV188	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV189	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV190	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV191	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV192	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #9 I/O control words										
CV193	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV194	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV195	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV196	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV197	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV198	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV199	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV200	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #10 I/O control words										
CV201	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV202	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV203	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV204	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV205	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV206	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV207	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV208	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #11 I/O control words										

CV	Description									Notes
CV209	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV210	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV211	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV212	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV213	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV214	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV215	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV216	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #12 I/O control words										
CV217	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV218	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV219	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV220	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV221	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV222	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV223	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV224	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #13 I/O control words										
CV225	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV226	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV227	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV228	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV229	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV230	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV231	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV232	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
I/O #14 I/O control words										
CV233	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV234	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV235	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV236	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV237	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1

CV238	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV239	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV240	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
	I/O #15 I/O control words									
CV241	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV242	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV243	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV244	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV245	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV246	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV247	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV248	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
	I/O #16 I/O control words									
CV249	aaaaaaaa=lo addr, hhh=hi addr	a	a	a	a	a	a	a	a	Low address
CV250	t=alt/precision, mm=mode	t	s	m	m	h	h	h	h	control / High address
CV251	d=dir, D=port I/O, ss=sec trans, tt=transition	d	D	s^2	s^2	s^1	s^1	t	t	Dir and Transition
CV252	i=inv, ttt=type, TTTT=Timing	i	t	t	t	T	T	T	T	I/O control
CV253	Sec #1 lo address bits	a	a	a	a	a	a	a	a	Secondary #1
CV254	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
CV255	Sec #2 lo address bits	a	a	a	a	a	a	a	a	Secondary #2
CV256	d=dir, p=pol, tt=type, hhhh=hi addr	d	p	t	t	h	h	h	h	"
	CV257-384 I/O #17-32									
	CV385-512 I/O #33-48									
	CV513-640 I/O #49-64									
	CV641-896 = 256 bytes used for Stepper Table NOT Implemented!									

Notes:
Mode/Operation:

	Stepper Table entry #1									
CV641	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits 11111111=Position lo bits
CV642	Position 1 ls	l	l	l	l	l	l	l	l	
CV643	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate dddd = Deceleration Rate
CV644	Option type 1 / speed 1	t	t	t	s	s	s	s	s	ttt = Option Type

CV	Description									Notes
CV645	Position 2 ms	m	m	m	m	m	m	m	m	000 = normal 001 = rebound 010 = continuous left 011 = continuous right 100 = repeat left 101 = repeat right 110 = xx 111 = stop (sets position = 0) sssss = Speed
CV646	Position 2 ls	l	l	l	l	l	l	l	l	
CV647	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	
CV648	Option type 2 / speed 2	t	t	t	s	s	s	s	s	
CV649	Position 3 ms	m	m	m	m	m	m	m	m	
CV650	Position 3 ls	l	l	l	l	l	l	l	l	
CV651	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV652	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV653	Position 4 ms	m	m	m	m	m	m	m	m	
CV654	Position 4 ls	l	l	l	l	l	l	l	l	
CV655	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV656	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #2

CV	Description									Notes
CV657	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits llllllll=Position lo bits aaaa = Acceleration Rate dddd = Deceleration Rate ttt = Option Type 000 = normal 001 = rebound 010 = continuous left 011 = continuous right 100 = repeat left 101 = repeat right 110 = xx 111 = stop (sets position = 0) sssss = Speed
CV658	Position 1 ls	l	l	l	l	l	l	l	l	
CV659	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	
CV660	Option type 1 / speed 1	t	t	t	s	s	s	s	s	
CV661	Position 2 ms	m	m	m	m	m	m	m	m	
CV662	Position 2 ls	l	l	l	l	l	l	l	l	
CV663	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	
CV664	Option type 2 / speed 2	t	t	t	s	s	s	s	s	
CV665	Position 3 ms	m	m	m	m	m	m	m	m	
CV666	Position 3 ls	l	l	l	l	l	l	l	l	
CV667	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV668	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV669	Position 4 ms	m	m	m	m	m	m	m	m	
CV670	Position 4 ls	l	l	l	l	l	l	l	l	
CV671	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV672	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #3

CV	Description									Notes
CV673	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits llllllll=Position lo bits aaaa = Acceleration Rate dddd = Deceleration Rate ttt = Option Type 000 = normal 001 = rebound
CV674	Position 1 ls	l	l	l	l	l	l	l	l	
CV675	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	
CV676	Option type 1 / speed 1	t	t	t	s	s	s	s	s	
CV677	Position 2 ms	m	m	m	m	m	m	m	m	

CV678	Position 2 ls	l	l	l	l	l	l	l	l	010 = continuous left
CV679	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	011 = continuous right
CV680	Option type 2 / speed 2	t	t	t	s	s	s	s	s	100 = repeat left
CV681	Position 3 ms	m	m	m	m	m	m	m	m	101 = repeat right
CV682	Position 3 ls	l	l	l	l	l	l	l	l	110 = xx
CV683	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	111 = stop (sets position = 0)
CV684	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV685	Position 4 ms	m	m	m	m	m	m	m	m	sssss = Speed
CV686	Position 4 ls	l	l	l	l	l	l	l	l	
CV687	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV688	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #4

CV689	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits
CV690	Position 1 ls	l	l	l	l	l	l	l	l	lllllll l=Position lo bits
CV691	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate
CV692	Option type 1 / speed 1	t	t	t	s	s	s	s	s	dddd = Deceleration Rate
CV693	Position 2 ms	m	m	m	m	m	m	m	m	ttt = Option Type
CV694	Position 2 ls	l	l	l	l	l	l	l	l	000 = normal
CV695	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	001 = rebound
CV695	Option type 2 / speed 2	t	t	t	s	s	s	s	s	010 = continuous left
CV697	Position 3 ms	m	m	m	m	m	m	m	m	011 = continuous right
CV698	Position 3 ls	l	l	l	l	l	l	l	l	100 = repeat left
CV699	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	101 = repeat right
CV700	Option type 3 / speed 3	t	t	t	s	s	s	s	s	110 = xx
CV701	Position 4 ms	m	m	m	m	m	m	m	m	111 = stop (sets position = 0)
CV702	Position 4 ls	l	l	l	l	l	l	l	l	
CV703	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	sssss = Speed
CV704	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #5

CV705	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits
CV706	Position 1 ls	l	l	l	l	l	l	l	l	lllllll l=Position lo bits
CV707	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate
CV708	Option type 1 / speed 1	t	t	t	s	s	s	s	s	dddd = Deceleration Rate
CV709	Position 2 ms	m	m	m	m	m	m	m	m	ttt = Option Type
CV710	Position 2 ls	l	l	l	l	l	l	l	l	000 = normal
											001 = rebound
											010 = continuous left
											011 = continuous right

CV711	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	100 = repeat left
CV712	Option type 2 / speed 2	t	t	t	s	s	s	s	s	101 = repeat right 110 = xx 111 = stop (sets position = 0)
CV713	Position 3 ms	m	m	m	m	m	m	m	m	
CV714	Position 3 ls	l	l	l	l	l	l	l	l	sssss = Speed
CV715	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV716	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV717	Position 4 ms	m	m	m	m	m	m	m	m	
CV718	Position 4 ls	l	l	l	l	l	l	l	l	
CV719	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV720	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #6

CV721	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits llllllll=Position lo bits
CV722	Position 1 ls	l	l	l	l	l	l	l	l	
CV723	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate dddd = Deceleration Rate
CV724	Option type 1 / speed 1	t	t	t	s	s	s	s	s	
CV725	Position 2 ms	m	m	m	m	m	m	m	m	ttt = Option Type 000 = normal
CV726	Position 2 ls	l	l	l	l	l	l	l	l	001 = rebound 010 = continuous left
CV727	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	011 = continuous right 100 = repeat left
CV728	Option type 2 / speed 2	t	t	t	s	s	s	s	s	101 = repeat right 110 = xx
CV729	Position 3 ms	m	m	m	m	m	m	m	m	111 = stop (sets position = 0)
CV730	Position 3 ls	l	l	l	l	l	l	l	l	
CV731	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	sssss = Speed
CV732	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV733	Position 4 ms	m	m	m	m	m	m	m	m	
CV734	Position 4 ls	l	l	l	l	l	l	l	l	
CV735	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV736	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #7

CV737	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits llllllll=Position lo bits
CV738	Position 1 ls	l	l	l	l	l	l	l	l	
CV739	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate dddd = Deceleration Rate
CV740	Option type 1 / speed 1	t	t	t	s	s	s	s	s	
CV741	Position 2 ms	m	m	m	m	m	m	m	m	ttt = Option Type 000 = normal
CV742	Position 2 ls	l	l	l	l	l	l	l	l	001 = rebound 010 = continuous left
CV743	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	011 = continuous right 100 = repeat left 101 = repeat right

CV744	Option type 2 / speed 2	t	t	t	s	s	s	s	s	110 = xx 111 = stop (sets position = 0) sssss = Speed
CV745	Position 3 ms	m	m	m	m	m	m	m	m	
CV746	Position 3 ls	l	l	l	l	l	l	l	l	
CV747	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV748	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV749	Position 4 ms	m	m	m	m	m	m	m	m	
CV750	Position 4 ls	l	l	l	l	l	l	l	l	
CV751	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV752	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #8

CV753	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits llllllll=Position lo bits aaaa = Acceleration Rate dddd = Deceleration Rate ttt = Option Type 000 = normal 001 = rebound 010 = continuous left 011 = continuous right 100 = repeat left 101 = repeat right 110 = xx 111 = stop (sets position = 0) sssss = Speed
CV754	Position 1 ls	l	l	l	l	l	l	l	l	
CV755	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	
CV756	Option type 1 / speed 1	t	t	t	s	s	s	s	s	
CV757	Position 2 ms	m	m	m	m	m	m	m	m	
CV758	Position 2 ls	l	l	l	l	l	l	l	l	
CV759	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	
CV760	Option type 2 / speed 2	t	t	t	s	s	s	s	s	
CV761	Position 3 ms	m	m	m	m	m	m	m	m	
CV762	Position 3 ls	l	l	l	l	l	l	l	l	
CV763	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV764	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV765	Position 4 ms	m	m	m	m	m	m	m	m	
CV766	Position 4 ls	l	l	l	l	l	l	l	l	
CV767	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV768	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

Stepper Table entry #9

CV769	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits llllllll=Position lo bits aaaa = Acceleration Rate dddd = Deceleration Rate ttt = Option Type 000 = normal 001 = rebound 010 = continuous left 011 = continuous right 100 = repeat left 101 = repeat right 110 = xx 111 = stop (sets position = 0)
CV770	Position 1 ls	l	l	l	l	l	l	l	l	
CV771	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	
CV772	Option type 1 / speed 1	t	t	t	s	s	s	s	s	
CV773	Position 2 ms	m	m	m	m	m	m	m	m	
CV774	Position 2 ls	l	l	l	l	l	l	l	l	
CV775	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	
CV776	Option type 2 / speed 2	t	t	t	s	s	s	s	s	

CV777	Position 3 ms	m	m	m	m	m	m	m	m	sssss = Speed
CV778	Position 3 ls	l	l	l	l	l	l	l	l	
CV779	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV780	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV781	Position 4 ms	m	m	m	m	m	m	m	m	
CV782	Position 4 ls	l	l	l	l	l	l	l	l	
CV783	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV784	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

	Stepper Table entry #10									
CV785	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits 11111111l=Position lo bits
CV786	Position 1 ls	l	l	l	l	l	l	l	l	
CV787	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate dddd = Deceleration Rate
CV788	Option type 1 / speed 1	t	t	t	s	s	s	s	s	ttt = Option Type 000 = normal
CV789	Position 2 ms	m	m	m	m	m	m	m	m	001 = rebound 010 = continuous left
CV790	Position 2 ls	l	l	l	l	l	l	l	l	011 = continuous right 100 = repeat left
CV791	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	101 = repeat right 110 = xx
CV792	Option type 2 / speed 2	t	t	t	s	s	s	s	s	111 = stop (sets position = 0)
CV793	Position 3 ms	m	m	m	m	m	m	m	m	sssss = Speed
CV794	Position 3 ls	l	l	l	l	l	l	l	l	
CV795	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV796	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV797	Position 4 ms	m	m	m	m	m	m	m	m	
CV798	Position 4 ls	l	l	l	l	l	l	l	l	
CV799	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV800	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

	Stepper Table entry #11									
CV801	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits 11111111l=Position lo bits
CV802	Position 1 ls	l	l	l	l	l	l	l	l	
CV803	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate dddd = Deceleration Rate
CV804	Option type 1 / speed 1	t	t	t	s	s	s	s	s	ttt = Option Type 000 = normal
CV805	Position 2 ms	m	m	m	m	m	m	m	m	001 = rebound 010 = continuous left
CV806	Position 2 ls	l	l	l	l	l	l	l	l	011 = continuous right 100 = repeat left
CV807	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	101 = repeat right 110 = xx
CV808	Option type 2 / speed 2	t	t	t	s	s	s	s	s	111 = stop (sets position = 0)
CV809	Position 3 ms	m	m	m	m	m	m	m	m	sssss = Speed

CV810	Position 3 ls	l	l	l	l	l	l	l	l	
CV811	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV812	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV813	Position 4 ms	m	m	m	m	m	m	m	m	
CV814	Position 4 ls	l	l	l	l	l	l	l	l	
CV815	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV816	Option type 4 / speed 4	t	t	t	s	s	s	s	s	
	Stepper Table entry #12									
CV817	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits lllllll l=Position lo bits
CV818	Position 1 ls	l	l	l	l	l	l	l	l	
CV819	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate dddd = Deceleration Rate
CV820	Option type 1 / speed 1	t	t	t	s	s	s	s	s	ttt = Option Type
CV821	Position 2 ms	m	m	m	m	m	m	m	m	000 = normal 001 = rebound
CV822	Position 2 ls	l	l	l	l	l	l	l	l	010 = continuous left
CV823	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	011 = continuous right 100 = repeat left
CV824	Option type 2 / speed 2	t	t	t	s	s	s	s	s	101 = repeat right
CV825	Position 3 ms	m	m	m	m	m	m	m	m	110 = xx
CV826	Position 3 ls	l	l	l	l	l	l	l	l	111 = stop (sets position = 0)
CV827	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	sssss = Speed
CV828	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV829	Position 4 ms	m	m	m	m	m	m	m	m	
CV830	Position 4 ls	l	l	l	l	l	l	l	l	
CV831	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV832	Option type 4 / speed 4	t	t	t	s	s	s	s	s	
	Stepper Table entry #13									
CV833	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits lllllll l=Position lo bits
CV834	Position 1 ls	l	l	l	l	l	l	l	l	
CV835	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate dddd = Deceleration Rate
CV836	Option type 1 / speed 1	t	t	t	s	s	s	s	s	ttt = Option Type
CV837	Position 2 ms	m	m	m	m	m	m	m	m	000 = normal 001 = rebound
CV838	Position 2 ls	l	l	l	l	l	l	l	l	010 = continuous left
CV839	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	011 = continuous right 100 = repeat left
CV840	Option type 2 / speed 2	t	t	t	s	s	s	s	s	101 = repeat right 110 = xx
CV841	Position 3 ms	m	m	m	m	m	m	m	m	111 = stop (sets position = 0)
CV842	Position 3 ls	l	l	l	l	l	l	l	l	sssss = Speed

CV	Description									Notes
CV843	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	
CV844	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV845	Position 4 ms	m	m	m	m	m	m	m	m	
CV846	Position 4 ls	l	l	l	l	l	l	l	l	
CV847	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV848	Option type 4 / speed 4	t	t	t	s	s	s	s	s	
Stepper Table entry #14										
CV849	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits
CV850	Position 1 ls	l	l	l	l	l	l	l	l	llllllll=Position lo bits
CV851	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate
CV852	Option type 1 / speed 1	t	t	t	s	s	s	s	s	dddd = Deceleration Rate
CV853	Position 2 ms	m	m	m	m	m	m	m	m	ttt = Option Type
CV854	Position 2 ls	l	l	l	l	l	l	l	l	000 = normal
CV855	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	001 = rebound
CV856	Option type 2 / speed 2	t	t	t	s	s	s	s	s	010 = continuous left
CV857	Position 3 ms	m	m	m	m	m	m	m	m	011 = continuous right
CV858	Position 3 ls	l	l	l	l	l	l	l	l	100 = repeat left
CV859	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	101 = repeat right
CV860	Option type 3 / speed 3	t	t	t	s	s	s	s	s	110 = xx
CV861	Position 4 ms	m	m	m	m	m	m	m	m	111 = stop (sets position = 0)
CV862	Position 4 ls	l	l	l	l	l	l	l	l	sssss = Speed
CV863	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV864	Option type 4 / speed 4	t	t	t	s	s	s	s	s	
Stepper Table entry #15										
CV865	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits
CV866	Position 1 ls	l	l	l	l	l	l	l	l	llllllll=Position lo bits
CV867	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate
CV868	Option type 1 / speed 1	t	t	t	s	s	s	s	s	dddd = Deceleration Rate
CV869	Position 2 ms	m	m	m	m	m	m	m	m	ttt = Option Type
CV870	Position 2 ls	l	l	l	l	l	l	l	l	000 = normal
CV871	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	001 = rebound
CV872	Option type 2 / speed 2	t	t	t	s	s	s	s	s	010 = continuous left
CV873	Position 3 ms	m	m	m	m	m	m	m	m	011 = continuous right
CV874	Position 3 ls	l	l	l	l	l	l	l	l	100 = repeat left
CV875	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	101 = repeat right

110 = xx
111 = stop (sets position = 0)

sssss = Speed

CV876	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV877	Position 4 ms	m	m	m	m	m	m	m	m	
CV878	Position 4 ls	l	l	l	l	l	l	l	l	
CV879	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV880	Option type 4 / speed 4	t	t	t	s	s	s	s	s	
	Stepper Table entry #16									
CV881	Position 1 ms	m	m	m	m	m	m	m	m	mmmmmmmm=Position hi bits
CV882	Position 1 ls	l	l	l	l	l	l	l	l	11111111=Position lo bits
CV883	Acceleration/Deceleration 1	a	a	a	a	d	d	d	d	aaaa = Acceleration Rate
CV884	Option type 1 / speed 1	t	t	t	s	s	s	s	s	dddd = Deceleration Rate
CV885	Position 2 ms	m	m	m	m	m	m	m	m	ttt = Option Type
CV886	Position 2 ls	l	l	l	l	l	l	l	l	000 = normal
CV887	Acceleration/Deceleration 2	a	a	a	a	d	d	d	d	001 = rebound / 010 = continuous left
CV888	Option type 2 / speed 2	t	t	t	s	s	s	s	s	011 = continuous right / 100 = repeat left
CV889	Position 3 ms	m	m	m	m	m	m	m	m	101 = repeat right / 110 = xx
CV890	Position 3 ls	l	l	l	l	l	l	l	l	111 = stop (sets position = 0)
CV891	Acceleration/Deceleration 3	a	a	a	a	d	d	d	d	sssss = Speed
CV892	Option type 3 / speed 3	t	t	t	s	s	s	s	s	
CV893	Position 4 ms	m	m	m	m	m	m	m	m	
CV894	Position 4 ls	l	l	l	l	l	l	l	l	
CV895	Acceleration/Deceleration 4	a	a	a	a	d	d	d	d	
CV896	Option type 4 / speed 4	t	t	t	s	s	s	s	s	

897-1024	NMRA Reserved = 128 bytes	

Byte totals:

Range	Used	Comment
1-32	7	NMRA Info area
33-64		
112-112	1	Configuration options
121-128		
128-639	512	Input/Output Control
640-895	256	Stepper Tables

Total