

4RV/2 VOTE LOCK SUPPLIMENT



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4RV/2 Version 4.1.1

VOTE-LOCK OPTIONS

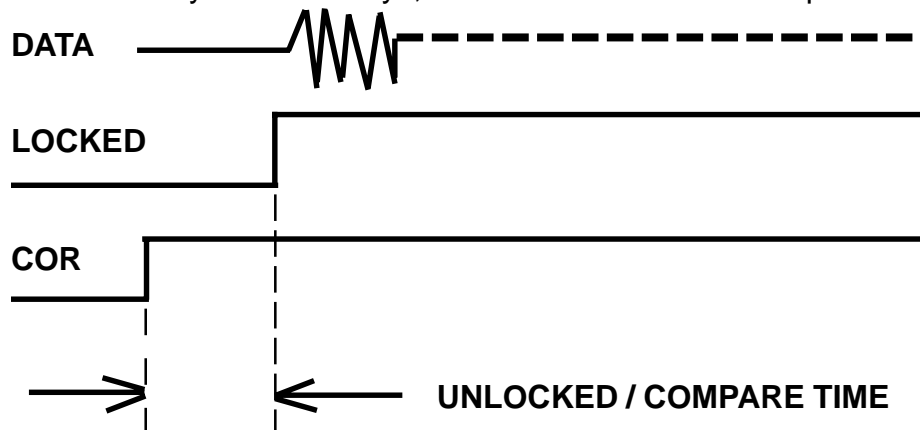
The 4RV/2 has a new "Vote-Lock" option. The lock option will vote freely for the first second / seconds. The factory setting is approximately 1 second. After that time, the channel voted at that time will stay voted throughout the transmission or until the locked channel COR is removed. At that time the best remaining channel will then vote and stay voted. This allows for a "Single" vote mode, versus a "Continuous" voter mode. This is used when voting during a transmission is not permitted such as during data transmissions.

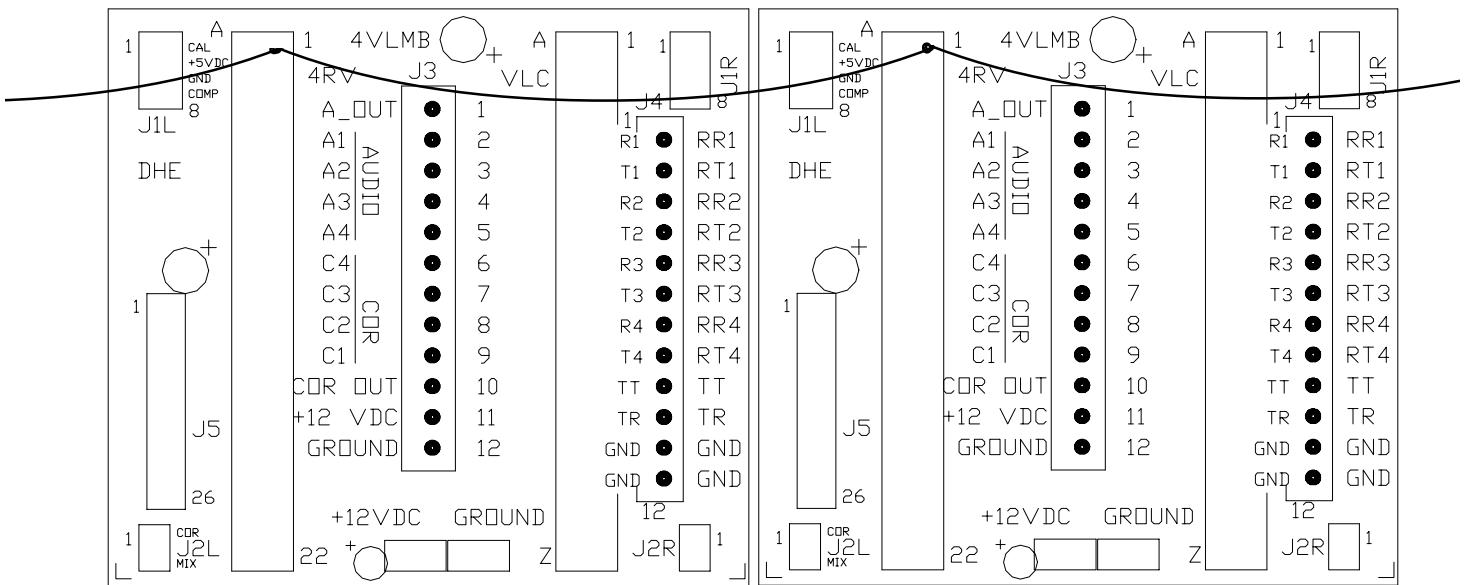
In data systems, a front porch or quiet window on the beginning "n" seconds will allow the voter to determine the best channel, after the predetermined time, the voter would lock on that channel to prevent any interruption of the data transmission.

The factory implemented unlocked time is approximately 1 second. To enable the "Vote-Lock" mode ground pin 1 on the voter edge connector. On the 4RVMB there originally no provision for the "Vote-Lock" mode. Therefore no connection is made to this pin. In systems with more than 4 channels these pins must be tied together to operate correctly. The values of R7 (220K) and C12 (10uF) determine the lock timing. R7 can be reduced in value decreasing lock timing. R7 can be between 220k to 10k. C12 should not exceed 20uF.

Each 4 channel card keeps track of the unlocked time independently starting when any COR input to that card comes active. This would be the standard use of the "Vote-Lock" function built into the 4RV/2.

To implement fully synchronized locking (on more than 4 channels) or to use a time much different than the factory setting will require an external implementation. This implementation will require the "Lock Enable" pin to function as an external lock input. Remove C12 on all voter cards to provide the "External Lock Input". The lock timing will now be external, based on the COR Out going active (grounded) and delaying a given number of milliseconds / seconds. After the timer expires, it would then ground the "External Lock Input" pin on all the voters simultaneously. J1 on the master has all the connections necessary to facilitate the external implementation as a piggy back card. Custom applications can be implemented many different ways, Call for more details and options.





Jumping of the LOCK ENABLE pins 1 of the 4RV/2's together is only necessary if a common enable switch is used to control the lock mode. If an external LOCK timer is used the jumpers will also need to be present. If the internal LOCK function is used and will always be active, a jumper on each 4RV/2 card J1 pin 1 to pin 3 will activate each card. Grounding of the LOCK ENABLE pin activates the lock function.

The 4RV/2 programmed logic that implements the vote lock function is a trade secret of Doug Hall Electronics and is not published.

4RV VOTER CARD PINOUT

SHOWN FROM THE CONNECTOR END
 CONNECTOR SIMILAR TO VECTOR R644 44 PIN 0.156" SPACING
 COMPONENT SIDE FOIL SIDE

BLANKING	A	1	LOCK ENABLE
AUDIO OUT	B	2	CALIBRATE BUS
RCVR #2 AUDIO IN	C	3	RCVR #1 AUDIO IN
RCVR #4 AUDIO IN	D	4	RCVR #3 AUDIO IN
+5 (ANLG GND)	E	5	+5 (ANLG GND)
RCVR #2 T.P.	F	6	RCVR #1 T.P.
GROUND (ANLG -V)	H	7	SELECT RCVR #2
COMPARATOR BUS	J	8	SELECT RCVR #1
+12 Vdc	K	9	+12 Vdc
RESERVED	L	10	RESERVED
RESERVED	M	11	RESERVED
RESERVED	N	12	+5 (LOGIC VCC)
RCVR #4 T.P.	P	13	SELECT RCVR #3
RCVR #3 T.P.	R	14	SELECT RCVR #4
RCVR #3 DISABLE	S	15	RCVR #4 COR
RCVR #4 DISABLE	T	16	RCVR #3 COR
RCVR #2 COR	U	17	RCVR #2 VOTED
RCVR #1 COR	V	18	RCVR #1 VOTED
RCVR #2 DISABLE	W	19	RCVR #4 VOTED
RCVR #1 DISABLE	X	20	RCVR #3 VOTED
COR OUT	Y	21	AUDIO MIXER IN
GROUND	Z	22	GROUND

EDGE CONNECTOR PINOUT

SIGNAL NAME	EDGE PIN #
GROUND	
- LED BLANKING	A
AUDIO OUT	B
AUDIO CHAN B IN	C
AUDIO CHAN D IN	D
+ 5V ANALOG GROUND IN/OUT	E
T P CHAN B OUT	F
GND / ANALOG -VCC	H
COMPARATOR BUS	J
+ 12 V IN	K
RESERVED	L
RESERVED	M
RESERVED	N
T P CHAN D OUT	P
T P CHAN C OUT	R
DISABLE CHAN C IN	S
DISABLE CHAN D IN	T
COR CHAN B IN	U
COR CHAN A IN	V
DISABLE CHAN B IN	W
DISABLE CHAN A IN	X
COR OUT	Y
GROUND	Z
VISUAL COPY ENABLE	

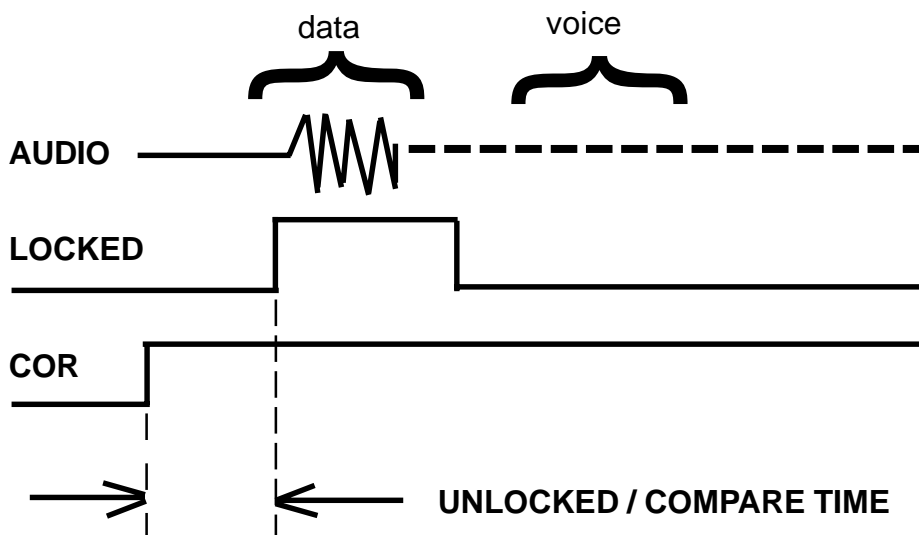


DATA AND DATA-VOICE APPLICATION NOTES

To use the factory default VOTE LOCK implementation the "front porch" would have an unmodulated carrier for greater than 60 milliseconds and a lock time greater than 70 milliseconds. The factory C12 = 10 uF and R7 = 220K combination produces approximately a 900 millisecond vote window. To lock with a value other than the factory setting use the table provided. **If the lock time is less than 60 milliseconds the diodes DA6, DB6, DC6, and DD6 will have to be removed.** This will provide a faster initial vote sequence. In some limited testing, satisfactory results were achieved with vote times (with all local receivers) around 20 milliseconds. Using remote receivers and tone decodes would vary the results. With this short of window to voter other factors require extended vote windows.

Where DATA alone is used the VOTE then LOCK is best.

Where DATA and VOICE are used together a VOTE the front porch, then LOCK during the data, then VOTE during the voice transmission. This would be implemented by removing the internal lock timing circuits (remove C12). The lock timing would then be external. Using the drop of COR_OUT (J1 pin 40) as the trigger, the LOCK_ENABLE (J1 pin 3) as the lock output. The LOCK_ENABLE would be high (float) for "n" milliseconds during the data, then low for "n" milliseconds to lock during the data, then high again for the rest of the COR_OUT time. When the COR_OUT goes high (float) the lock function is inactive.



VOTE LOCK TIMING CHART

C12= 10uF		C12= 4.7 uF	
R7	T (sec)	R7	T (sec)
680000	3.000	680000	1.30
470000	1.900	470000	0.90
330000	1.300	330000	0.60
220000	0.900	220000	0.40
150000	0.600	150000	0.26
100000	0.400	100000	0.18
68000	0.250	68000	0.12
47000	0.170	47000	0.08
33000	0.130	33000	0.06
22000	0.085	22000	0.04
15000	0.060	15000	0.03
10000	0.040	10000	0.01
6800	0.025	6800	0.01
4700	0.017	4700	0.00
3300	0.013	3300	0.00