MOTOROLA INC.

instruction manual revision

GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

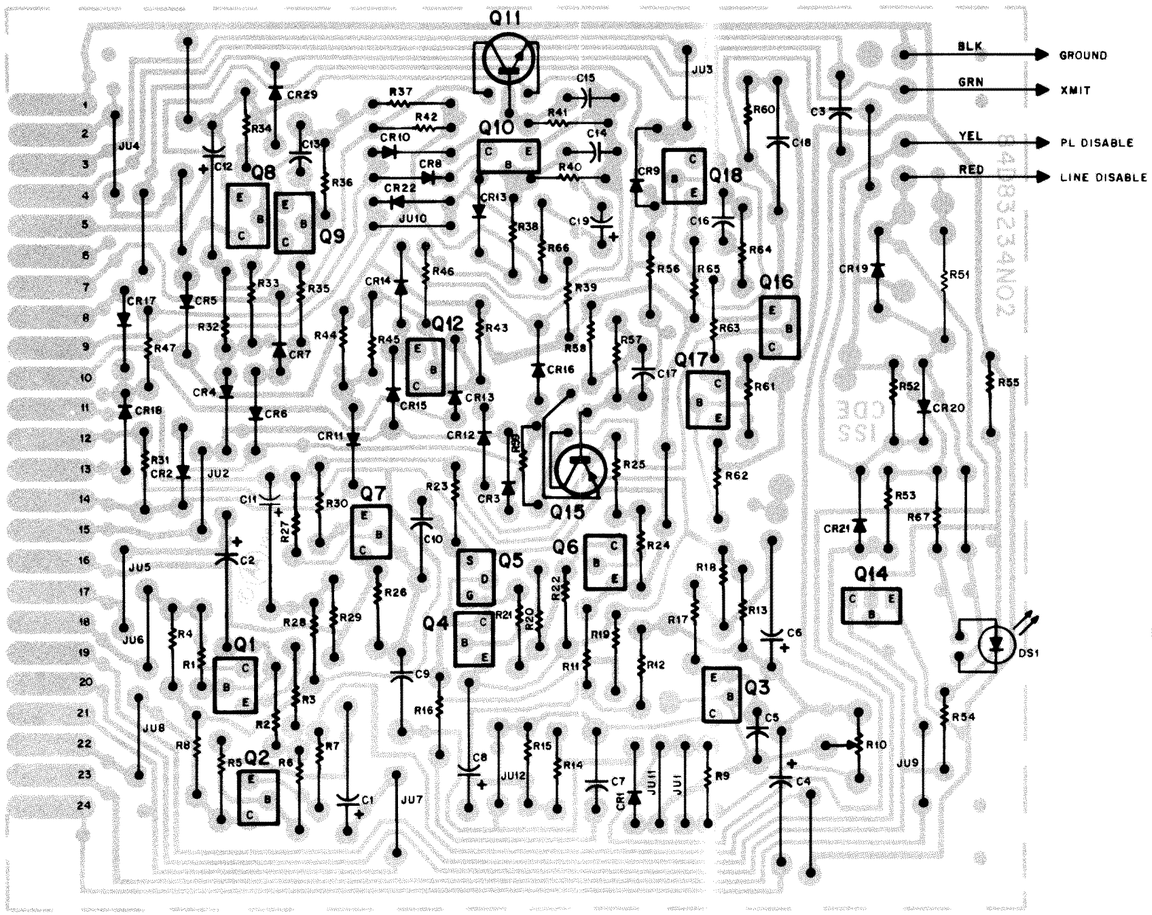
INSTRUCTION MANUALS AFFECTED:

68P81017E85-D	Micor® Compa-Station Base Radio
68P81025E55-B	Micor® Community Repeater
68P81025E60-F	Micor® Base and Repeater Stations
68P81031E95-A	Micor® Community Repeater

REVISION DETAILS:

The TLN4635C Station Control Module replaces the TLN4635A and TLN4635B. Replace the instruction section in your manual with the attached instruction section 68P81078E27-O.

MODEL TLN4635C STATION CONTROL MODULE



TRANSISTOR BASE DETAILS

BOTTOM VIEW ALL TRANSISTORS EXCEPT Q5

Q5 BASE DETAIL (BOTTOM VIEW)

NOTE:
Q6,Q9,Q15,Q16,Q18 ARE PNP TYPE, ALL THE REST ARE NPN TYPE.

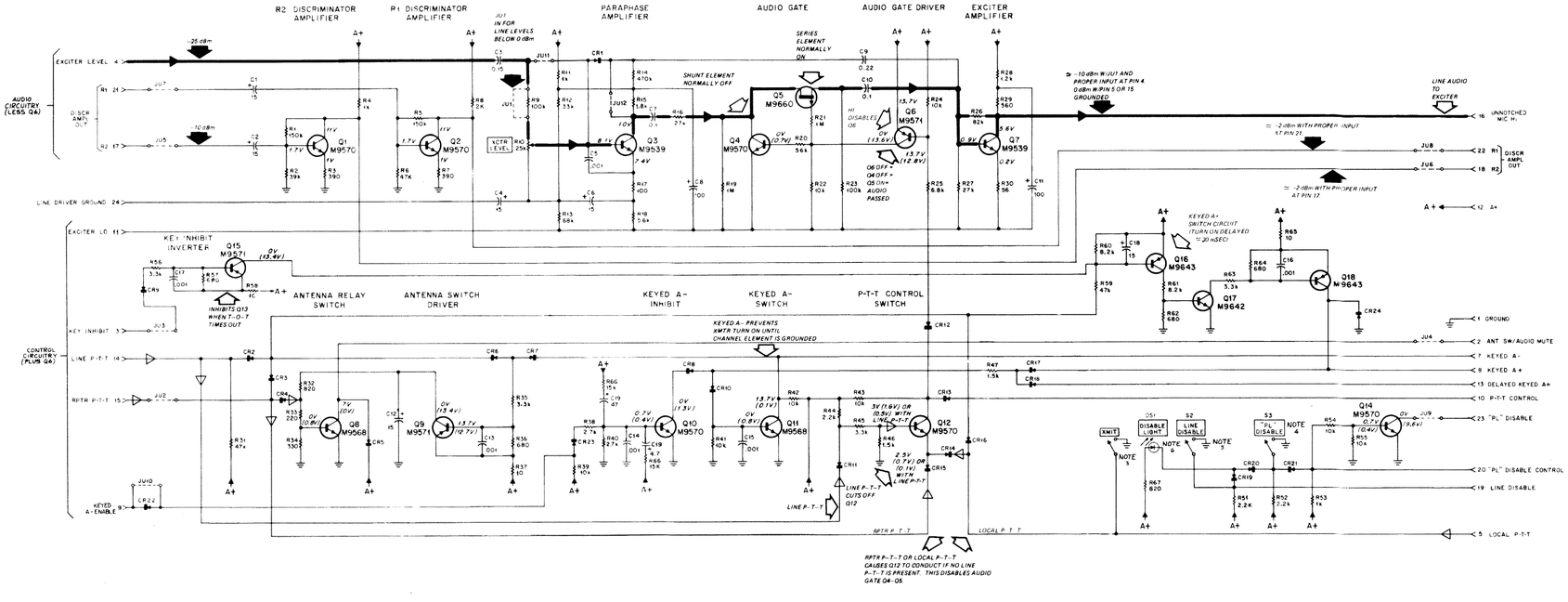
SOLDER SIDE BD-CEPS-34548-A OL-CEPS-45664-O SHOWN FROM SOLDER SIDE

parts list

TLN4635C Station Control Module PL-10952-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		capacitor, fixed: uF ±10%; 50 V:unless otherwise stated
C1,2	23-865136	15 ±20%; 25 V
C3	8-82905G05	0.15
C4	23-865136	15 ±20%; 25 V
C5	21-82187B29	.001; 100 V
C6	23-865136	15 ±20%; 25 V
C7	8-82905G07	0.10
C8	23-84665F03	100
C9	8-82905G11	0.22
C10	8-82905G07	0.10
C11	23-84665F03	100
C12	23-865136	15
C13 thru 17	21-82187B29	.001; 100 V
C18	23-82783B24	15 ±10%; 25 V
C19	23-11019A40	47
		semidonductor device diode: (see note)
CR1,2,3,4	48-83654H01	silicon
CR5	48-82466H13	silicon
CR6 thru 24	48-83654H01	silicon
		light emitting diode: (see note)
DS1	48-88245C29	green
		jumpers:
JU1 thru 12	6-11009B23	zero ohm resistor
		transistor: (see note)
Q1,2	48-869642	NPN; type M9642
Q3	48-869539	NPN; type M9539
Q4	48-869642	NPN; type M9642
Q5	48-869660	FET, p-channel; type M9660
Q6	48-869643	PNP; type M9643
Q7	48-869539	NPN; type M9539
Q8	48-869568	NPN; type M9568
Q9	48-869643	PNP; type M9643
Q10	48-869642	NPN; type M9642
Q11	48-869568	NPN; type M9568
Q12	48-869642	NPN; type M9642
Q13		NOT USED
Q14	48-869642	NPN; type M9642
Q15, 16	48-869643	PNP; type M9643
Q17	48-869642	NPN; type M9642
Q18	48-869643	PNP; type M9643
		resistor, fixed: ±10%; 1/4 W: unless otherwise stated
R1	6-11009D02	150k
R2	6-11009C87	39k
R3	6-11009C39	390
R4	6-11009C49	1k
R5	6-11009D02	150k
R6	6-11009C89	47k
R7	6-11009C39	390
R8	6-11009C56	2k
R9	6-11009C97	100k
R10	18-83083G03	var: 25k
R11	6-11009C49	1k
R12	6-11009C85	33k
R13	6-11009C93	68k
R14	6-11009D14	470k
R15	6-11009C55	1.8k
R16	6-11009C83	27k
R17	6-11009C25	100
R18	6-11009C67	5.6k
R19	6-11009D22	1 meg
R20	6-11009C91	56k
R21	6-11009D22	1 meg
R22	6-11009C73	10k
R23	6-11009C97	100k
R24	6-11009C73	10k
R25	6-11009C69	6.8k
R26	6-11009C95	82k
R27	6-11009C83	27k
R28	6-11009C51	1.2k
R29	6-11009C43	560
R30	6-11009C19	56
R31	6-11009C89	47k
R32	6-11009C47	820
R33	6-11009C33	220
R34	6-11009C37	330
R35	6-11009C61	3.3k
R36	6-11009C45	680
R37	6-11009C01	10
R38	6-11009C59	2.7k
R39	6-11009C73	10k
R40	6-11009C59	2.7k
R41	6-11009C73	10k
R42	6-11009C73	10k
R43	6-11009C73	10k
R44	6-11009C57	2.2k
R45	6-11009C61	3.3k
R46	6-11009C53	1.5k
R47	6-11009C53	1.5k
R48,49,50		NOT USED
R51	6-11009C57	2.2k
R52	6-11009C57	2.2k
R53	6-11009C49	1k
R54,55	6-11009C73	10k
R56	6-11009C61	3.3k
R57	6-11009C45	680
R58	6-11009C01	10
R59	6-11009C89	47k
R60, 61	6-11009C71	8.2k
R62	6-11009C45	680
R63	6-11009C61	3.3k
R64	6-11009C45	680
R65	6-11009C01	10
R66	6-11009C77	15k
R67	6-11009C47	820 ohms
		switch:
S1	40-83468E01	slide; xmtr.
S2,3	40-83204B01	slide; PL & line disable
		mechanical parts
	3-84256M01	SCREW, tapping; 2 used
	43-82721C01	BUSHING, snap
	5-84220B01	GROMMET; 2 used
	9-83697M01	RECEPTACLE, single contact; 24 used
	39-10184A10	CONTACT, plug; 4 used
	64-83415R01	PANEL, screened
	6-11009B23	JUMPER, zero ohm resistor; 5 used

note: Replacement diodes and transistors must be ordered by Motorola part number only for optimum performance.



EEPS-45663-O

END OF DOCUMENT

Maintenance & Troubleshooting

This module may be serviced either while connected to the unified chassis interconnect board or while connected to separate external test equipment. Refer to the unified chassis interconnect board servicing information in this manual for "setup" details.

Step 1. Check jumpers as applicable for the mode of operation of this module.

Step 2. Connect power and signal sources to the module as indicated in the following chart.

Pin No.	Connect
1, 11, 24	Ground
4	Audio Oscillator
12	+ 12 Volts dc
16	AC Voltmeter to Ground
2	10 Kilohms to 12 Volts dc
10	10 Kilohms to 12 Volts dc
23	10 Kilohms to 12 Volts dc

Note: Level adjust control should be full clockwise.

Step 3. Adjust audio oscillator output for -25 dBm at pin 4. Pin 16 should measure approximately -10 dBm with JU1 connected. If this level cannot be achieved, check stages Q3 and Q7. If the level is correct, ground pin 5 or pin 15 and note that the reading drops to 0. If this does not occur check stages Q4 and Q5 and their associated driver stages.

Step 4. Ground pins 14 and 9. Measure the dc voltage at pins 10 and 8. Each should read + 12 volts. Pins 7 and 2 should read zero. If a voltage or ground does not appear at the prescribed location, check each stage associated with that location.

Step 5. Ground pin 15. Measure the dc voltage at pins 7 and 2. Each should read + 12 volts. Pin 10 should read zero volts.

Step 6. With pin 15 still grounded, apply a ground to pin 14. Check for + 12 volts dc at pin 10.

Step 7. Ground pin 20 and check the dc voltage at pin 23. The meter indication should be + 12 volts. Remove the ground from pin 20 and the voltage should drop to zero.

Step 8. Apply a -10 dBm signal from the audio oscillator to pin 17 and measure the ac voltage at pin 18. The voltmeter should indicate approximately -2 dBm.

Step 9. Apply a -10 dBm signal from the audio oscillator to pin 21 and check the ac voltage on pin 22. The indication should be approximately -2 dBm.

Control Theory

When a PTT signal is applied to pin 5, 14, or 15 the following functions occur:

— A low is applied to the base of Q16. After a 30 millisecond delay. This provides a high output to pin 8 and to Q11 from Q17 and Q18.

— The drive to Q11 will be inhibited by Q10 until a low is applied to pin 9, indicating an oscillator channel element ground. This prevents A- from energizing the transmitter circuits until after the channel element has been grounded. Q11 can also be inhibited by a low entering on pin 3 from the time-out-timer module at the end of a pre-set time limit.

— The low is also applied to the base of Q9 where it is inverted and applied as a high to the base of Q8. If a low is applied as repeater PTT on pin 15, Q8 will be inhibited. However, if the low is applied to either pin 5 or 14, Q8 will saturate and provide a low to operate the antenna switch. Switch Q8 does not turn off the instant PTT low is removed. Instead it is kept on for the time required for C12 to discharge through R32 and R33. This allows the high level rf energy to decay before the antenna switch reverts to the receive condition.

— If the PTT low is applied to the module on pin 5 or 15, a conduction path is provided for Q12. When Q12 conducts, a low is applied to pin 10. This control can be overridden by a line PTT signal applied to pin 14. This signal reaches the base of Q12 causing it to cut off and remove the low from pin 10.

When Xmit switch S1 is actuated, a ground is supplied to the emitter of Q12 with the same result as a low applied to pin 5 or 15. Actuating line disable switch S2 applies a ground output to pin 19. S2 also provides a ground to the disable light DS1, which causes it to illuminate. When PL disable switch S3 is actuated, DS1 also illuminates and a low is applied to the base of PL disable inverter Q14. This low causes Q14 (which is normally conducting) to cut off and removes the PL disable switched ground from pin 23. The station should not be left in the line or PL disable mode under normal operating conditions.

In Private-Line applications, keyed A- release is delayed at the end of a transmission by an input to pin 13 from the external Private-Line reverse burst circuitry. This input maintains transmitter keying for the duration of the reverse burst tone.

FUNCTION

- Integrates control functions from other modules to key the station transmitter.
- Adjusts exciter audio level.
- Amplifies receiver discriminator signals which are used externally.

NOTES:

1. JU1 is in for line levels below 0 dBm and removed for line levels above 0 dBm.
2. Voltages shown in parentheses are normally measured when function is activated. Voltages not in parentheses are normally measured when function is deactivated.
3. To key the transmitter, slide the Xmit switch to the right (closed) and hold in this position. To unkey the transmitter, release the switch.
4. When the PL disable switch is in the (normal) position (to the left) the Private-Line function of the station is operational. In the actuated position (to the right), the receiver Private-Line tone-coded squelch circuit is disabled so that all on-frequency signals may be monitored.
5. When the line disable switch is in the normal position (to the left, open), station operation can be initiated by remote control in the actuated position (to the right, closed), remote controls are disabled and the station can only be operated via local controls.
6. The disable light is illuminated when either the PL or line disable switches are actuated.

Jumper	JU1	JU2	JU3	JU4	JU5	JU6
Non-Trunked Repeater	IN	IN	IN	OUT	IN	IN
Trunked Repeater (*SECURENET* Capable)	IN	IN	IN	OUT	OUT	OUT
Trunked Repeater Earlier "AT" Version	IN	IN	IN	OUT	IN	IN

Jumper	JU7	JU8	JU9	JU10	JU11	JU12
Non-Trunked Repeater	IN	IN	IN	IN	OUT	OUT
Trunked Repeater (*SECURENET* Capable)	OUT	OUT	IN	IN	OUT	OUT
Trunked Repeater Earlier "AT" Version	IN	IN	IN	IN	OUT	OUT