### Introduction

This service bulletin affects the users of:

- the IPC-500 and IPC-500B telephone interconnect units fitted with the selcall decoder PCB type SC-350
- all IPC–500C units, up to serial number DO503, fitted with selcall decoder PCB type SC–500I

All IPC–500/B/C telephone interconnect units contain a data filter that is used in the IPC–500 selcall decoder PCBs. To improve the performance of the data filter, a number of capacitors on the PCBs should be replaced.

# Symptom

The IPC–500 telephone interconnect units may not respond to all incoming selective calls due to excessive noise interference.

## Action

A number of existing capacitors will need to be replaced with capacitors of the appropriate value, as listed in Table 1 and illustrated in Figures 2, 3 and 4. Alignment of the FSK signal filter and the FSK decoder must be checked.

## Equipment

The following equipment is required:

- oscilloscope (CRO)
- frequency counter
- alignment tool (non-metallic)

Head Office

© 17–00186 Issue 1, July 1998

Codan Pty Ltd ACN 007 590 605 81 Graves Street Newton South Australia 5074 Telephone +61 8 8305 0311 Facsimile +61 8 8305 0411 Codan (UK) Ltd Gostrey House Union Road Farnham, Surrey GU9 7PT United Kingdom Telephone +44 1252 717 272 Facsimile +44 1252 717 337

Codan Pty Ltd Suite 11A, 2 Hardy Street South Perth Western Australia 6151 Telephone +61 8 9368 5282 Facsimile +61 8 9368 5283

Codan Comunicaciones Ltda. Av. 11 de Septiembre 2155, Of. 701/A Edificio Panorámico Providencia Santiago, CHILE Teléfono +56 2 373 9577 Facsímile +56 2 373 9579

Page 1 of 5

Circuit reference	Capacitor values	Codan Part Number
C22	22n	46-42200-524
C23	68n	46-46800-521
C25	3n9	46-33900-524

Table 1: New capacitor values

#### Replacing the components of the IPC-500

- Disconnect the power from the transceiver.
- Disconnect the IPC–500 unit from the transceiver.
- Remove the screws from the top cover of your IPC–500 unit and remove the cover.
- Locate the selcall decoder PCB, which is positioned at the centre of the motherboard, and remove the 3 retaining screws securing it to the motherboard (see Figure 1).

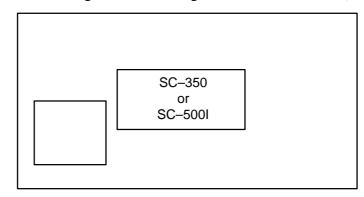


Figure 1: Location of the selcall decoder PCB on the motherboard

The PCB is specific to the type of IPC–500 unit:

- If you have an IPC-500 or an IPC-500B unit, the selcall decoder PCB that needs to be modified is SC-350, part number PC-B-030.4
- If you have an IPC–500C unit, the selcall decoder PCB that needs to be modified is SC–500I, part number 08–PA100
- Disconnect the ribbon cable loom from the selcall decoder PCB.
- Remove the PCB from the motherboard.
- □ Locate and remove the capacitors C22, C23 and C25 from the PCB using a vacuum desoldering station (see Figures 2, 3 and 4).

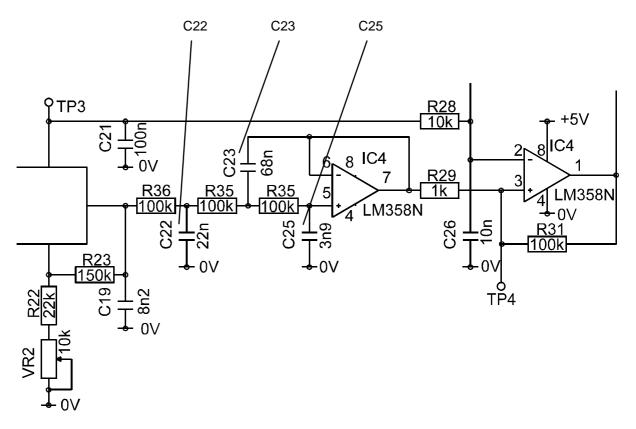


Figure 2: Circuit diagram with the correct capacitors in position

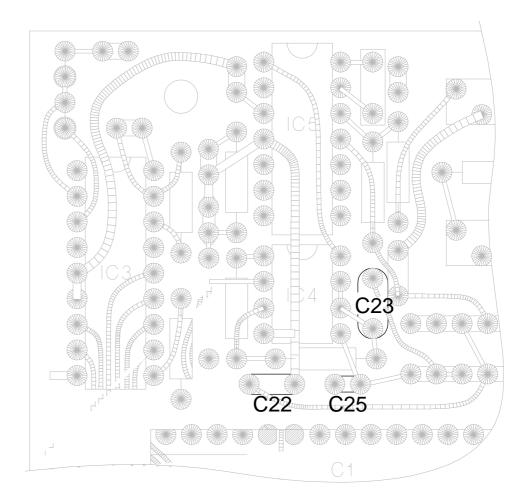


Figure 3: Assembly diagram of the SC-350 with the correct capacitors in position

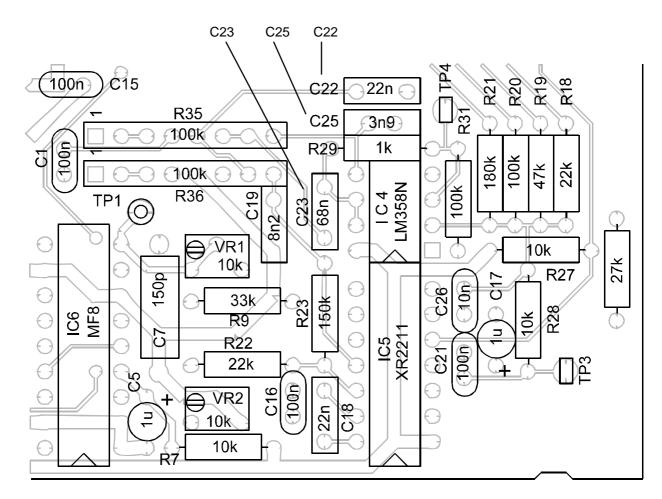


Figure 4: Assembly diagram of the SC-500I with the correct capacitors in position

- ☐ Replace the three capacitors with capacitors of the appropriate values as listed in Table 1. See Figures 2, 3 and 4 for the correct capacitor values and positioning.
  - The C25 replacement capacitor is larger than the one that is removed, so one of the legs must be bent to fit the capacitor into its position.
- Replace the PCB of the IPC–500 unit, ensuring the pins are aligned correctly on the connecting header.
- Secure the PCB to the motherboard with the 3 retaining screws.
- Perform an alignment check on the selcall decoder filter as follows.

#### FSK signal filter alignment

 $\bigcirc$ 

- Connect a high impedance (x10) CRO probe to TP1 (near IC6) on the PCB. Use TP2 (or mounting screw on IC8 voltage regulator) for earthing of the probe.
- Using the alignment tool, adjust VR1 trimpot on SC500I for  $177.2 \pm 0.1$  kHz as measured on a frequency counter.

For networks employing WA2 selcall protocol, adjust VR1 trimpot for  $168.8 \pm 0.1$  kHz.

A metallic adjustment tool loads the oscillator, so remove the tool before measuring the frequency accurately.

#### FSK decoder alignment

 $\mathcal{C}$ 

 $\mathbb{C}$ 

- Set the CRO sensitivity to 0.5 V/cm with DC coupling.
- Connect a x1 CRO probe to:
  - TP3 (or R28 lead closest to the edge of the board) of SC–500I. Centre the CRO display on the horizontal centre line, then move the CRO probe to TP4 (or R31 lead closest to centre of board), or
  - Pin 10 of IC5 (or R28 lead closest to the edge of the board) of SC–350. Centre the CRO display on the horizontal centre line, then move the CRO probe to pin 3 of IC 4 (or R31 lead closest to the centre of the board).
- Set the CRO time base to 10 ms per division.
- Send a selcall to the IPC–500C from another transceiver.
- ☐ While the selcall signal is in progress, adjust VR2 on PCB so that the sine wave signal excursions (approximately 1.5 V P−P) are equal on both sides of the horizontal centre line.
- Replace the top cover of the IPC–500 unit and secure it into position with the screws.
- Reconnect the IPC–500 telephone interconnect unit to the transceiver.
- Reconnect the power to the transceiver.
- Test that the system is operating correctly.
  - If you have any problems with this procedure, contact your Codan representative.