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Subject: **P170 (MC224) and SLM compatibility Issue**

Technical Bulletin

Background:

Some systems using a P292 (SLM Daughter Board) in a P170 (MC224) have experienced transient position errors, usually denoted by a knocking noise as the motor runs. On some units the problem appears to be temperature related and the problem decreases in frequency as the unit warms up.

The problem has been caused by the accuracy of the sync signal fed into the DriveLink^{MD} ASICs on the P292 from the P170. The system clock on the P170, like other Trio controllers, is generated by a spread spectrum frequency modulator to improve EMC performance by spreading the bandwidth of the clock by a small amount, thus reducing peaks in emissions from the product. A new device has been used on the P170 to generate the clock so this problem will not affect other products. The particular configuration of this device used on the P170 has resulted in the 1ms sync signal actually occurring every 999.2us to 999.4us.

Similar symptoms may be seen if a version of software before **i16126.out** is used on a P170 with SLM.

Affected Units:

This problem may be seen on P170's with serial number less than P170-00093. Not all boards will be affected, as there is some variation between devices.

Work-around:

For boards already in the field a simple change can be made to the P170 to improve the accuracy of the sync signal. By isolating pin 3 of U17 the spread of the clock is reduced and the 1ms sync signal is brought within a range that will work reliably with the DriveLink^{MD} ASICs. The trade off is a possible increase in emissions. Comparative checks were made between a modified and unmodified board and no significant increase in emissions was seen.

The easiest way to affect this change is to crop the pin of the IC as shown overleaf:
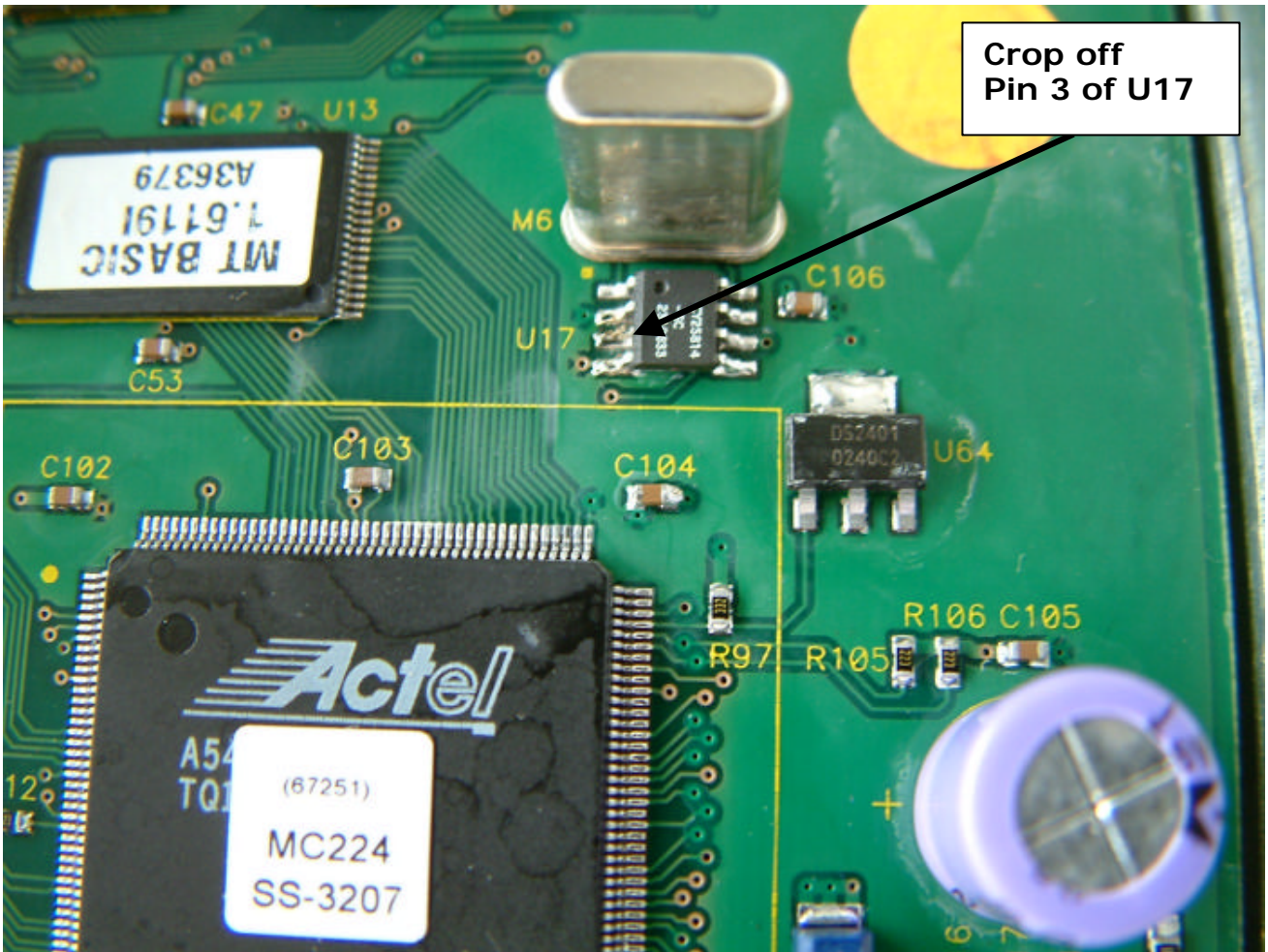
Crop off
Pin 3 of U17

Fig 1: MC224 Main Board

This work can be carried out, free of charge, by Trio if the unit is returned to the nearest Trio office or by the customer in the field if it is more convenient.

When the modification has been done, the system software must be updated to 1.6126 or later.

Long Term Solution:

A revision will be made to the P170 to use an alternative clock modulator that allows the use of higher levels of clock modulation but generates a clock that is within acceptable limits for the correct operation of the system and daughter boards plugged into it. This will be implemented as soon as possible and should be in place for the next production batch of P170's (serial number P170-00093 and greater).