

DESIGN TIP

RGB514/RGB524/RGB525/ RGB528 DAC Slew Rate

Several of the RGB Palette DAC products contain slew rate control on the DAC outputs. The default (power-on) settings of this DAC slew rate control is slow. If the DAC operation register is not properly set after power-on, the DAC outputs may change at an unacceptably slow rate for high resolution monitor operation.

Background

Early VGA monitors were not equipped to handle the high switching characteristics of the IBM RGB Palette DACs. The first (RGB525) and second generation (RGB 524/514/528) of Palette DACs contained a slew rate control circuit in the DAC to allow fast (2nsec) or slow (14nsec) slewing of the analog outputs. The slew rate control circuit also minimized the EMI noise generated by the DAC by reducing edge rates of the analog RGB signals.

The default (power-on) setting of the slew control circuit is slow for the RGB 525/514/524/528 Palette DACs. Consequently, if the graphics initialization software does not set this slew rate control to fast, the screen output in higher resolution modes will appear dim or faint. This is due to the inability of the DAC analog output to swing full scale within a pixel cycle.

The following RGB part numbers are affected:

Product	Part Numbers
RGB514	IBM37RGB514 CF 17 IBM37RGB514 CF 22
RGB524	IBM37RGB524 CF 17 IBM37RGB524 CF 22

Product	Part Numbers
RGB525	IBM37RGB525 CF 17 IBM37RGB525 CF 22 IBM37RGB525 CF 25
RGB528	IBM37RGB528 CF 17 IBM37RGB528 CF 22 IBM37RGB528 CF 25

Recommendation

To avoid a poor screen image from the default setting of the slew rate control circuit, it is recommended that the programmer immediately set the slew rate control to fast during power-on initialization software. The slew rate can be modified by setting the DAC Slew Rate control (bit 1) in the DAC Operation register (index = 0x0006) to one.

Third generation IBM Palette DACs (RGB 624) have defined the default setting of the DAC Slew Rate control bit to be fast. They are enabled to support high resolution screen modes at power-up.



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Printed in the United States of America
1-95

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