

SETCMOD

The preliminary output terms are computed as follows:

$$\begin{aligned}
 \text{FY}[7:0] &= \text{CY}[7:0] + (\text{DAC0} \ \& \ \{8\{\text{CMOD}[3]\}\}) + \text{Y}[7:0] && \text{(VGA R / HDTV Y)} \\
 \text{FI}[7:0] &= \text{CI}[7:0] + (\text{DAC0} \ \& \ \{8\{\text{CMOD}[2]\}\}) + \text{I}[7:0] && \text{(VGA G / HDTV Pb)} \\
 \text{FQ}[7:0] &= \text{CQ}[7:0] + (\text{DAC0} \ \& \ \{8\{\text{CMOD}[1]\}\}) + \text{Q}[7:0] && \text{(VGA B / HDTV Pr)} \\
 \\
 \text{FS}[7:0] &= \{8\{\text{DAC0}[0] \ \wedge \ \text{CMOD}[0]\}\} && \text{(VGA H-Sync)} \\
 \\
 \text{FIQ}[7:0] &= \text{CQ}[7:0] + \text{IQ}[7:0] && \text{(Chroma)} \\
 \\
 \text{FYS}[7:0] &= \text{DAC0}[1] \quad ? \quad 8'b0 && \text{(1x = Luma Sync)} \\
 &: \text{DAC0}[0] \quad ? \quad \text{CI}[7:0] && \text{(01 = Luma Blank/Burst)} \\
 &: \quad \quad \quad : \quad \text{CY}[7:0] + \text{Y}[7:0] && \text{(00 = Luma Visible)} \\
 \\
 \text{FYC}[7:0] &= \text{FYS}[7:0] + \text{IQ}[7:0] && \text{(Composite Luma+Chroma)}
 \end{aligned}$$

The final output terms are selected by CMOD[6:5]:

CMOD[6:5]	Mode	DAC3	DAC2	DAC1	DAC0
00	<off>	DAC3 (bypass)	DAC2 (bypass)	DAC1 (bypass)	DAC0 (bypass)
01	VGA (R-G-B) / HDTV (Y-Pb-Pr)	FY (R / Y)	FI (G / Pb)	FQ (B / Pr)	FS (H-Sync)
10	NTSC/PAL Composite + S-Video	FYC (Composite)	FYC (Composite)	FIQ (Chroma)	FYS (Luma)
11	NTSC/PAL Composite	FYC (Composite)	FYC (Composite)	FYC (Composite)	FYC (Composite)