

X85 Propagation Delay Specifications

Input	Decoding	FrameSync	SD NR	X85HD User Video Delay	Up/Down/HD-Cross/SD-ARC	SD User Video Delay	Encoding	Output	Minimum/Maximum Delays			
									Min. Total Delay	Min. Total Delay (ms)	Max. Total Delay (frames)	Max. Total Delay (ms)
CVBS	1 line	0~1 I-frame	1 line ~ 1 I-field	N/A	SD-ARC: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	2 I-fields	<40 (PAL), <33.4 (NTSC)	Up to: 6.5 I-frames	<260 (PAL), <217 (NTSC)
					N/A				< 3 lines	<0.192 (PAL), <0.191 (NTSC)	Up to: 5.5 I-frames	<220 (PAL), <184 (NTSC)
					SD-ARC: 2 I-fields			SD-SDI (MB)**	2 I-fields	<40 (PAL), <33.4 (NTSC)	Up to: 6.5 I-frames	<260 (PAL), <217 (NTSC)
					N/A	N/A	N/A		< 3 lines	<0.192 (PAL), <0.191 (NTSC)	Up to: 5.5 I-frames	<220 (PAL), <184 (NTSC)
					SD-ARC: 2 I-fields			SD-SDI (HD)**	2 I-fields	<40 (PAL), <33.4 (NTSC)	Up to: 2 I-frames	<80 (PAL), <67 (NTSC)
					Up: 2 I-fields			HD-SDI				
CVBS (FRC Mode)	1 line	0~1 I-frame	1 line ~ 1 I-field	N/A	SD-ARC: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	N/A	<50 (PAL), <45.1 (NTSC)	N/A	<270(PAL), <228.7 (NTSC)
					N/A							
					SD-ARC: 2 I-fields			SD-SDI (MB)**		<50 (PAL), <45.1 (NTSC)		<270(PAL), <228.7 (NTSC)
					N/A	N/A	N/A		<50 (PAL), <45.1 (NTSC)	<50 (PAL), <45.1 (NTSC)		<90(PAL), <78.7 (NTSC)
					SD-ARC: 2 I-fields			SD-SDI (HD)**				
					Up: 2 I-fields			HD-SDI				
S-Video/CAV; SD1/SD2 (MB)**	N/A	0~1 I-frame	1 line ~ 1 I-field	N/A	SD-ARC: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	2 I-fields	<40 (PAL), <33.4 (NTSC)	Up to: 7 I-frames	<280 (PAL), <234 (NTSC)
					N/A				< 2 lines	<0.128 (PAL), <0.127 (NTSC)	Up to: 5.5 I-frames	<220 (PAL), <184 (NTSC)
					SD-ARC: 2 I-fields			SD-SDI (MB)**	2 I-fields	<40 (PAL), <33.4 (NTSC)	Up to: 7 I-frames	<280 (PAL), <234 (NTSC)
					N/A	N/A	N/A		< 2 lines	<0.128 (PAL), <0.127 (NTSC)	Up to: 5.5 I-frames	<220 (PAL), <184 (NTSC)
					SD-ARC: 2 I-fields			SD-SDI (HD)**	2 I-fields	<40 (PAL), <33.4 (NTSC)	Up to: 2 I-frames	<80 (PAL), <67 (NTSC)
					Up: 2 I-fields			HD-SDI				
S-Video/CAV; SD1/SD2 (MB)** (FRC Mode)	N/A	0~1 I-frame	1 line ~ 1 I-field	N/A	SD-ARC: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	N/A	<50 (PAL), <45.1 (NTSC)	N/A	<290 (PAL), <245.7 (NTSC)
					N/A							
					SD-ARC: 2 I-fields			SD-SDI (MB)**		<50 (PAL), <45.1 (NTSC)		<290 (PAL), <245.7 (NTSC)
					N/A	N/A	N/A		<50 (PAL), <45.1 (NTSC)	<50 (PAL), <45.1 (NTSC)		<90 (PAL), <78.7 (NTSC)
					SD-ARC: 2 I-fields			SD-SDI (HD)**				
					Up: 2 I-fields			HD-SDI				
SD SDI1/SDI2; Fiber1/Fiber2 (HD)**	N/A	0~1 I-frame	N/A	0~12 I-frames	SD-ARC: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	2 I-fields	<40 (PAL), <33.4 (NTSC)	Up to: 18 I-frames	<720 (PAL), <601 (NTSC)
								SD-SDI (MB)**				
					SD-ARC: 2 I-fields	N/A	N/A	SD-SDI (HD)**			Up to: 14 I-frames*	<560 (PAL), <468 (NTSC)
					Up: 2 I-fields			HD-SDI				
SD SDI1/SDI2; Fiber1/Fiber2 (HD)** (FRC Mode)	N/A	0~1 I-frame	N/A	0~12 I-frames	SD-ARC: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	N/A	<50 (PAL), <45.1 (NTSC)	N/A	<730 (PAL), <612.7 (NTSC)
								SD-SDI (MB)**				
					SD-ARC: 2 I-fields	N/A	N/A	SD-SDI (HD)**				<570 (PAL), <479.7 (NTSC)
					Up: 2 I-fields			HD-SDI				
1080p/59.94	N/A	0~1 P-frame	N/A	0~12 P-frames	Dn: 1 P-frame	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	1 P-frame	<16.7	Up to: 14 P-frames + 4 I-frames	<367
								SD-SDI (MB)**				
						N/A	N/A	SD-SDI (HD)**			Up to: 14 P-frames*	<234
					1 P-frame	N/A	N/A	1080p/59.94			Up to: 14 P-frames*	<234
								1080p/23.98				
								1080i/59.94				
					1 P-frame	N/A	N/A	1080p/50	N/A	<30	N/A	<290
								1080i/50				
								1080p/25				
								720p/50				
1080p/23.98; 1080psf/23.98	N/A	0~1 P-frame	N/A	0~12 P-frames	Dn: 1 P-frame	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	1 P-frame	<41	Up to: 14 P-frames + 4 I-frames	<708
								SD-SDI (MB)**				
						N/A	N/A	SD-SDI (HD)**			Up to: 14 P-frames*	<574
					1 P-frame	N/A	N/A	1080p/59.94	1 P-frame	<41	Up to: 14 P-frames*	<574
								1080p/23.98				
								1080i/59.94				
								720p/59.94				

1080i/59.94	N/A	0~1 I-frame	N/A	0~12 I-frames	Dn: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	2 I-fields	<33.4	Up to: 18 I-frames	<601
						N/A	N/A	SD-SDI (MB)**		Up to: 14 I-frames	<468	
						N/A	N/A	SD-SDI (HD)**				
					2 I-fields	N/A	N/A	1080p/59.94	2 I-fields	<33.4	Up to: 14 I-frames*	<468
					1 I-field			1080p/23.98	1 I-field	<16.7	Up to: 13.5 I-frames*	<451
					2 I-fields			1080i/59.94	2 I-fields	<33.4	Up to: 14 I-frames*	<468
								720p/59.94				
					2 I-fields	N/A	N/A	1080p/50	N/A	<30	N/A	<290
					1 I-field			1080i/50				
					2 I-fields			1080p/25				
								720p/50				
720p/59.94	N/A	0~1 P-frame	N/A	0~12 P-frames	Dn: 1 P-frame	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	1 P-frame	<16.7	Up to: 14 P-frames + 4 I-frames	<367
						N/A	N/A	SD-SDI (MB)**				
						N/A	N/A	SD-SDI (HD)**		Up to: 14 P-frames*	<234	
					1 P-frame	N/A	N/A	1080p/59.94	1 P-frame	<16.7	Up to: 14 P-frames*	<234
					Several lines			1080p/23.98	< 50 lines	<1.11	Up to: 13 P-frames	<217
					1 P-frame			1080i/59.94	1 P-frame	<16.7	Up to: 14 P-frames*	<234
					1 P-frame	N/A	N/A	1080p/50	N/A	<30	N/A	<290
								1080i/50				
					Several lines			1080p/25		<10.33		<270
					1 P-frame			720p/50		<30		<290
1080p/50	N/A	0~1 P-frame	N/A	0~12 P-frames	Dn: 1 P-frame	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	1 P-frame	<20	Up to: 14 P-frames + 4 I-frames	<440
						N/A	N/A	SD-SDI (MB)**				
						N/A	N/A	SD-SDI (HD)**		Up to: 14 P-frames*	<280	
					1 P-frame	N/A	N/A	1080p/50	1 P-frame	<20	Up to: 14 P-frames*	<280
								1080i/50				
					1 P-frame	N/A	N/A	1080p/59.94	N/A	<28.4	N/A	<245.7
								1080p/23.98				
								1080i/59.94				
								720p/59.94				
1080i/50	N/A	0~1 I-frame	N/A	0~12 I-frames	Dn: 2 I-fields	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	2 I-fields	<40	Up to: 18 I-frames	<720
						N/A	N/A	SD-SDI (MB)**				
						N/A	N/A	SD-SDI (HD)**		Up to: 14 I-frames*	<560	
					2 I-fields	N/A	N/A	1080p/50	2 I-fields	<40	Up to: 14 I-frames *	<560
								1080i/50				
					1 I-field			1080p/25	1 I-field	<20	Up to: 13.5 I-frames *	<540
					2 I-fields			720p/50	2 I-fields	<40	Up to: 14 I-frames *	<560
					2 I-fields	N/A	N/A	1080p/59.94	N/A	<45.4	N/A	<479.7
					1 I-field			1080p/23.98		<28.4		<462.7
					2 I-fields			1080i/59.94		<45.4		<479.7
								720p/59.94				
1080p/25	N/A	0~1 P-frame	N/A	0~12 P-frames	Dn: 1 P-frame	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	1 P-frame	<40	Up to: 14 P-frames + 4 I-frames	<720
						N/A	N/A	SD-SDI (MB)**				
						N/A	N/A	SD-SDI (HD)**		Up to: 14 P-frames*	<560	
					1 P-frame	N/A	N/A	1080p/50	1 P-frame	<40	Up to: 14 P-frames*	<560
								1080i/50				
								1080p/25				
								720p/50				

720p/50	N/A	0~1 P-frame	N/A	0~12 P-frames	Dn: 1 P-frame	0 ~ 4 I-frames	6.28uS	CVBS, CAV, S-Vid	1 P-frame	<20	Up to: 14 P-frames + 4 I-frames	<440
						N/A	N/A	SD-SDI (MB)**				
						N/A	N/A	SD-SDI (HD)**			Up to: 14 P-frames*	
					1 P-frame	N/A	N/A	1080p/50	1 P-frame	<20	Up to: 14 P-frames *	<280
								1080i/50				
					Several lines			1080p/25	< 50 lines			
					1 P-frame			720p/50	1 P-frame			
					1 P-frame	N/A	N/A	1080p/59.94	N/A	<28.4	N/A	<245.7
					Several lines			1080p/23.98				<228.7
					1 P-frame			1080i/59.94				<245.7
								720p/59.94				

* In **SDI Processing Bypass**, reduce the delay by the value found in the field **Up/Down/HD-Cross/SD-ARC**'.

** In the **Input** and **Output** fields, **MB** indicates an SD-SDI output on the mainboard, while**HD** indicates an SD-SDI output on the X85HD module.

Video Path

When a block is inserted, the FS phase or SD-ARC will be compensated to maintain output, and the H/V phases won't change. If the SDNR is inserted, the propagation delay may not change or may add one extra I-frame, depending upon the FS phasing. The total FS+SDNR delay will be less than 1.5 I-frames.

If the SD-ARC is inserted, the propagation delay will add an extra 0.5 to 1.5 I-frames, depending upon FS phases and SD-ARC/HD-Dn phase settings.

If the strobe is inserted, the propagation delay most likely will not change; if a delay-line is inserted, the propagation delay will add an extra 0 to 4 I-frames, depending upon the delay line settings. If a keyer is inserted, the propagation delay most likely will not change. Using current software, the SD video path could be as shown in the diagram.

