# Preliminary Data Sheet Supplement

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| **Subject:** | Version Change |
| **Data Sheet Concerned:** | SDA 9488X, SDA 9588X, 6251-561-2PD, Edition Dec. 14, 2001 SDA 9489X, SDA 9589X, 6251-562-2PD, Edition Dec. 14, 2001 |
| **Supplement:** | No. 1/ 6251-580-1PDS |
| **Edition:** | Dec. 14, 2001 |

**Changes from the SDA 94/9588X Version B23 to the SDA 94/9589X Version B31:**

## 1. Compatibility Note

1. The SDA 94/9588X-B31 is hardware-compatible to the SDA 94/9589X-B23.

2. Both the SDA 94/9588X-B31 and the SDA 94/9589X-B31 are **NOT** software-compatible to any previous version. For $I^2C$ differences, please refer to respective preliminary data sheet of version B31 (change bars).

## 2. Changes from Version B23 to Version B31

### 2.1. Color Decoder

| Item | Changes | Reason for Change / Previous Behavior | $I^2C$ Bits Concerned |
|---|---|---|---|
| 1 | The search duration of the standard detection was changed. In B23, 20 or 30 fields can be chosen. In B31, 15, 17, 20, or 25 fields are possible. Additionally, the chroma PLL hold-range is adjustable (from ±460 .... ±620 Hz). Both changes only have effect when starting from PAL or NTSC mode (e.g. switching from PAL→Secam or NTSC M→PAL M). | Improves color-standard recognition process. | LOCKSP (new, 2 bit) CLRANGE (new, 2 bit) |
| 2 | The NTSC/PAL detection is improved to show color for bad VCR trick-mode sources. The sensitivity to reject a signal has been lowered. | The PIP IC sometimes does not show any color when a bad trick-mode signal of a VCR is applied. The NTSC/PAL detection is improved so that color is also shown. | PALIDL1 (new, 1 bit) PALIDL2 (new, 1 bit) PALINC1 (new, 1 bit) PALINC2 (new, 1 bit) |
| 3 | PAL misdetection corrected. A PAL detection circuit, which calculates the burst-alternation is additionally used. | It is possible (but occurs very rarely) that SECAM signals are detected as PAL B/G. | ADLCK (new, 1 bit) ADLCSEL (new, 1 bit) ADLCKCC (new, 1 bit) PALDET (new, 1 readbit) |
| 4 | SECAM misdetection corrected. Detection thresholds made adjustable. | Signals without burst or very noisy PAL signals are detected as SECAM. | SCMIDL (new, 3 bit) SCMREL (new, 2 bit) SECACCL (new, 3 bit) SECACC (new, 1 bit) SECDIV (new, 1 bit) |
| 5 | Alternative Bell-filter characteristic (SECAM) selectable. | Improves color-transients (SECAM only) | BELLIIR (new, 1 bit) |

## 2.2. Clamping

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|----------------------------------------|-----------------------|
| 6 | Clamping strategy can be changed to back-porch clamping. To remove disturbing color-carrier, a burst filter is applied. However, sync-tip clamping can also be used alternatively. To prevent flicker with sync-tip clamping (sometimes seen in B23), the black-level reconstruction was changed. | Picture flickering due to unstable digital reconstruction of black value. When using back-porch clamping, a constant value (= non-flickering) can be used for black value reconstruction. | CLMPSTGY (new, 1 bit)<br>FILTBRST (new, 1 bit)<br>CLMPIST (3 add. bits)<br>BLKVCHYS (new, 1 bit)<br>BLKVCVAL (new, 1 bit)<br>BLKVCFIL (new, 1 bit)<br>BCOROFF (new, 1 bit) |
| 7 | Clamping characteristic of A/D converter adjustable. High current is only used for big clamping errors. At its operating point, only low current is used. As a benefit, a smaller clamping capacitor can be used in the application. | Clamping is always a compromise between noise-generation and hum-elimination, dependent on the clamping capacitor. When using a big clamping capacitor (e.g. 220 nf), no clamping noise occurs, but hum-elimination is decreasing. | CLMPCHARY (new, 1 bit)<br>LATENCY (new, 2 bit) |

## 2.3. Inset Sync Separation

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|----------------------------------------|-----------------------|
| 8 | V-sync separation improved:<br>– vertical slicing level adjustable independent from H-slicing level<br>– additional lowpass-filtering selectable<br>– integration time adjustable | Improves vertical detection. VCR tapes behave better with a lower threshold. Noisy antenna signals show better behavior with a higher threshold. | SLLTHDV (new, 3 bit)<br>SLLTHDP (new, 1 bit)<br>VDETITC (new, 1 bit)<br>VDETIFS (new, 1 bit)<br>VLP (new, 2 bit) |
| 9 | 50 Hz or 60 Hz operation for sync separation and color decoding may now be forced separately or selected to work automatically. | Misdetected line-standard (50/60) has influence on color-decoder. When only 60 Hz signals need to be decoded, FLNSTRD should be used instead of DISPSTD. | FLNSTRD (new, 2 bit) |
| 10 | Noise reduction of horizontal PLL changed. Faster PLL behavior selectable. | VCR tapes sometimes show a 'top-bend' when the signal contains a big phase-shift. | NSRED (1 add. bit)<br>ISHFT (new, 2 bit) |
| 11 | Detected vertical pulses are gated to suppress unwanted syncs. The window (opening and closing) can be adjusted separately for 50 and 60 Hz signals. Dependent on the detected standard, VTHRH50/VTHRL50 or VTHRH60/VTHRL60 are used. | Noisy or bad signals produce misdetected vertical syncs. These lead to an unstable picture. By this gating, most of the unwanted syncs are suppressed. Instead of a compromise, best setting can be chosen for 50 and 60 Hz. | VTHRH50 (new, 4 bit)<br>VTHRH60 (new, 4 bit)<br>VTHRL50 (new, 7 bit)<br>VTHRL60 (new, 7 bit) |
| 12 | Horizontal slicing-level threshold adjustable. | Improves horizontal stability. VCR tapes behave slightly better with a lower threshold. Noisy antenna signals show less jitter with a higher threshold. | SLLTHD (new, 2 bit) |
| 13 | Automatic detection of 50/60 Hz made less sensitive. Furthermore, detection time may be changed to slower behavior. | The automatic detection of 50/60 Hz sometimes fails. During channel change, the wrong standard is sometimes detected for a short time, resulting in a change of the vertical picture size. | DETECT5060 (new, 1 bit) |
| 14 | Vertical flywheel mode included. When the IC detects correct vertical pulses for some fields, single missing syncs are generated at the correct position without visible artefact. | Missing vertical pulses lead to shortly stopping picture. | VFLYWHLMD (new, 2 bit)<br>VFLYWHL (new, 1 bit) |
| 15 | New notch filter characteristic | Picture not sharp enough | NADJ (new, 3 bit) |

## 2.4. Post Processing

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|----------------------------------------|-----------------------|
| 16 | Peaking range increased. PKBOOST doubles amount of peaking. | Picture not sharp enough | PKBOOST (new, 1bit) |

## 2.5. Analog Phase Shifter

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|---------------------------------------|----------------------|
| 17 | Internal signal in parent phase shifter delayed. | Improve yield. No change in functionality. | |

## 2.6. Parent Processing

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|---------------------------------------|----------------------|
| 18 | Malfunction of an internal state-machine removed. | If the PIP is initialized with HZOOM = 0 and POSCOR = 0 in 100Hz mode and the inset picture is on the right side of the parent picture, the right side of the inset picture is blanked. After switching HZOOM to another frequency and back, or changing POSCOR from 0 to 1 and back, this effect disappears. | HZOOM, POSCOR |

## 2.7. Input Processing

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|---------------------------------------|----------------------|
| 19 | Horizontal lines removed | When Nosig-behavior is set to "show background" and VSHRNK > 0, horizontal lines are visible in PIP when a weak or no signal is applied. Number of lines depends on VSHRNK. | |

## 2.8. IIC

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|---------------------------------------|----------------------|
| 21 | SIZEHOR = 1/2 selectable for basic types | improvement of picture sharpness for 1/9 PIP e.g. for a 4:3 picture tube: SIZEHOR = '00', SIZEVER = '00', HZOOM = '110', HSHRNK = '01110' | SIZEHOR |

## 2.9. Cancelled Features (removed from data sheet)

| Item | Changes | Reason for Change / Previous Behavior | I$^2$C Bits Concerned |
|------|---------|---------------------------------------|----------------------|
| C1 | Position correction cancelled (errata sheet item E2.2) | PIP breaks down occasionally if display is changed from 525 to 625 lines and v.v.. | |
| C2 | Double Window Mode 1 in 100 Hz mode cancelled (errata sheet item E2.3) | In DW 1mode, the picture is displayed with one field being shifted by 55 lines. | |

## 2.10. Revision History

| Version | Changes |
|---------|---------|
| 1.0 | initial version for B31 version |
| 1.1 | redesign updates |
| 1.2 | updated after verification |