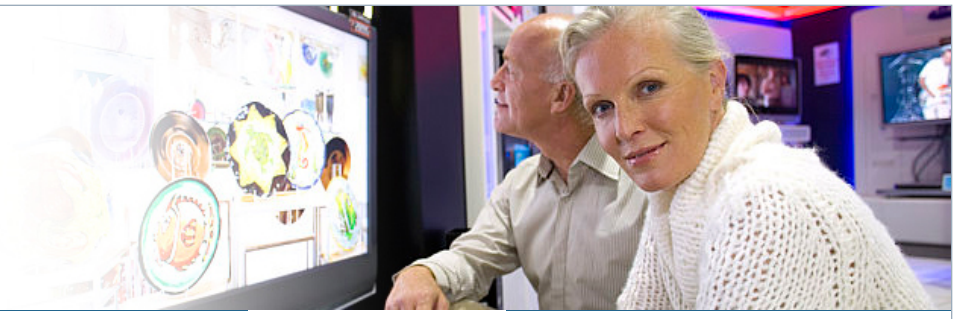
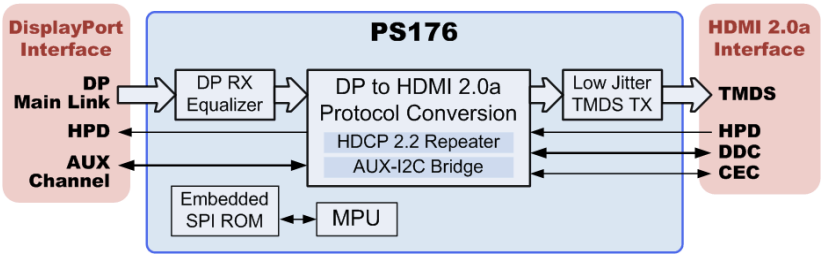


PS176 — DisplayPort to HDMI 2.0a

The PS176 is a DisplayPort™ (DP) to HDMI™ 2.0a video interface converter ideal for cable adapters, television receivers, monitors, and other applications requiring video protocol conversion. It will accept any DisplayPort input format including DP 1.1a, DP 1.2 or DP 1.3. It can output legacy HDMI and DVI video modes as well as the new HDMI 2.0a format. HDMI 2.0a is supported up to the allowable maximum TMDS date rate of 6Gbit/sec, enabling 4K UHD video at 60 frames per second in 4:4:4 video mode at 24 bits-per-pixel.



The PS176 provides anonymous, automatic operation enabled by an integrated microprocessor that uses an internal SPI ROM for configuration and microcode. The SPI ROM can be field-updated through the Displayport AUX channel or device I2C slave input. System control is available through the I2C slave input, and an I2C master interface is available for external EDID and expansion functions. The PS176 fully supports both HDCP 1.4 and HDCP 2.2 content protection, including the HDCP repeater function, with integrated HDCP Rx & Tx keys.

Key Features

- Integrates a DisplayPort receiver and HDMI 2.0a transmitter for video format conversion
- Supports display resolution up to 4096 x 2160 at 60Hz frame rate with 24-bit color and 4:4:4 color sampling, using a 4 lane DP 1.2 or DP 1.3 input at the HBR2 (5.4Gbps) data rate
- Jitter cleaning PLL provides stable HDMI output signal with wide compliance margin
- HDCP 1.4 and HDCP 2.2 repeater function with on-chip keys
- Internal YCbCr 4:4:4 /4:2:2 to YCbCr 4:2:0 conversion capability
- Includes on-chip microprocessor with internal SPI ROM
- 1.2V core power supply & 3.3V I/O power supply
- Low power consumption
- Internal crystal oscillator, supports external crystal or reference clock
- ESD: HBM 7kV
- 48-pin 6x6mm QFN package, RoHS Halogen free

HDMI/DVI Transmitter Capability

- HDMI 2.0a transmitter, up to 6.0Gbit/sec per TMDS data channel

For more information, please contact us.

- CEC support through dedicated receptacle interface signal
- RGB format supported at 8/10/12 bits-per-component
- YCbCr format supported at 8/10/12 bits-per-component in 4:4:4/4:2:2/4:2:0 pixel format
- Supports TMDS scrambling for EMI/RFI reduction
- Supports SCDC (Status and Control Data Channel)
- Audio output formats: 8-ch LPCM, compressed audio and HBR
- 24-bit audio sample size, up to 192 kHz sample rate
- HDCP 1.4 and HDCP 2.2 content protection, includes on-chip keys

DisplayPort Receiver Capability

- Accepts DisplayPort 1.1a, 1.2a, or 1.3
- Supports 1/2/4 lanes at 1.62/2.7/5.4 Gbit/sec per lane
- Supports full link training and no link training operation
- RGB format supported at 6/8/10/12 bits-per-component
- YCbCr format supported at 8/10/12 bits-per-pixel in 4:4:4/4:2:2 pixel format
- Supports CEC-Tunneling-over-AUX as per DP 1.3 Standard
- Programmable receiver equalization to compensate for PCB and/or connector losses
- Audio input formats: 8-ch LPCM, compressed audio and HBR
- 24-bit audio sample size, up to 192 kHz sample rate
- Supports DisplayPort Spread Spectrum Clocking
- HDCP 1.4 and HDCP 2.2 content protection, includes on-chip keys

Applications:

- DisplayPort to HDMI active protocol converters
- DisplayPort Alt Mode over USB Type-C™ to HDMI protocol converters
- Thunderbolt to HDMI protocol converters
- HDMI output driver on docking stations
- DisplayPort input on television receivers
- DisplayPort input on monitors