

"Simply the best"

HD₂ line Pro made by **Penta** Studiotechnik

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HD2line PRO – High Performance Broadcast LCD Monitors

HD2line Pro represents the newest generation of Broadcast LCD Monitors from Penta, utilizing state-of-the-art video and audio processing hardware combined with the most precise LC display technology available today.

17" Monitor



21.5" Monitor



24" Monitor



32" Monitor



The HD2line Pro Series is based on Penta's exclusive high-precision 16 Bit Display engine, and 10 Bit full HD Panels. In designing these monitors, the priority was to achieve the full performance and capabilities required by Broadcast Professionals. There is no compromises in core features like color accuracy, resolution, precise imaging and picture quality.

The HD2line Pro Series of LCD Broadcast Monitors are ideally suited for critical high-end video- and graphic applications - wherever the brilliance and sharpness of high resolution images are required.

Flexible Input / Output Configuration

The HD2line Pro series Monitors use a modular slot design. Inputs and Outputs can be configured according to individual needs. Three board slots are available. Optional input / output boards can be installed in any board slot, and in almost any combination, allowing easier configuration. Optional boards are recognized automatically by the system without the need to reconfigure the unit. All HD2line Pro displays feature DVI-I, VGA and CVBS inputs as standard.

37" Monitor



42" Monitor



47" Monitor



A multi-format 3G/HD/SD-SDI input with an optional Fiber Optic Module supports data rates up to 3 Gb/s and accepts SD-SDI, HD-SDI, Dual-Link HD-SDI, and 3G-SDI. Accepted signal formats amongst others: 480i/29.97, 576i/25, 720p/50 and 720p/60, 10-bit/12-bit RGB 4:4:4, 1080psf/23.98, 1080p/23.98, 1080psf/24, 1080p/24, 1080psf/25, 1080p/25, 1080i/25, 1080psf/30, 1080p/30 and 1080i/30(29.97), 10-bit 4:2:2 1080p/50 and 1080p/60(59.94).

Multiple analog and digital audio I/O modules complement the range of available options, including discrete analog or digital inputs and de-embedded audio outputs.

HD2line Pro – Perfect Color Accuracy



True-color reproduction is essential for any broadcast application. The exclusive color management system of the HD2line Pro Series uses a unique 1-D and 3-D LUT to reproduce precise color gamuts to conform to SMPTE and ITU standards.

The ultimate color space adjustment guarantees repeatable and precise color reproduction. By using the built-in remote control interface, a precise Radio Spectrometer, e.g. Minolta's CS 2000 / CS 200 and the HD2match software tool on your PC, an automatic matching process adjusts the display to your preset parameters. Of course you can adjust the settings manually at any time. Each HD2line Pro Display leaves the factory precisely calibrated.

Centralized Monitor wall Control

Built into DCS (Display Control Suite) is also a centralized monitor wall control. Intuitive and user friendly software is provided for real time or offline monitor wall configuration. The remote control software gives access to all parameters on individual monitors as well as pre-defined groups of monitors in a larger system or OB van. A complex monitor wall can easily be created by drag and drop monitors into your layout. DCS gives a perfect overview of the settings of each monitor.



icon mode



real monitor wall

External Control

HD2line Pro Broadcast LCD Monitors integrate easily with existing Tally systems and controllers. Dynamic and static IMD and Tally support is provided via Ethernet network or up to 6 GPI contact closures. GPIs are individual configurable.



Product Highlights - HD2line Pro at a Glance



- Ultimate picture quality
- Outstanding gray scale and color depth through a 16 bit panel driver
- Number of colors displayed: 1.07 billion colors (RGB - 10 bits each)
- Perfect and repeatable color matching between monitors
- Multiple color gamuts
- Precise picture uniformity and stability
- Multi-format signal support – freedom to operate in whichever format you work
- Automatic aspect ratio and mode identification
- 1:1 pixel mapping
- Perfect motion interpolation for interlaced signals
- Wide range of input formats: analog and digital up to 3 Gb/s
- Fiber optic input
- VITC/ATC timecode display
- NTP (network time protocol) driven realtime display
- WSS/AFD indicator
- Closed Caption decoding (ITU-608/708)
- Dolby indicator
- 8 channel audio level meter
- Selectable color temperature 3200 K, 5400 K, 6504 K, 9300 K
- Color component display modes: all, red-, green-, blue-only, monochrome
- Dynamic and static IMD support
- Tally support via GPI and VGPI (network)
- Safe area and safe title
- DCS remote control software
- Centralized monitor wall control via Ethernet
- Ethernet-based remote control panel
- Programmable GPI control
- Multilingual on screen menu display
- Built-in screensaver to minimize sticking
- Built-in diagnostic and test pattern generator
- Rugged, durable design
- No fans - no noise
- Optional ND glass filter
- Optional 3D-Mixer



Specifications		
General		
Model	PDP 17W-IPS	PDP 21,5W
Type	Multiformat HDTV / SDTV LCD Monitor - 8 bit panel	Multiformat HDTV / SDTV LCD Monitor - 8 bit panel
Screen size	17" wide format	21.5" wide format
Aspect ratio	16:10	16:9
Native resolution	1280 x 768 pixels	1920 x 1080 pixels
Effective screen size	227.76 mm (H) x 369.60 mm (W)	267.30 mm (H) x 475.20 mm (W)
Display colors	16.67 million	16.67 million
Brightness / max. brightness	85 cd/m ² conforms to EBU spec. - 350 cd/m ² max. brightness	85 cd/m ² conforms to EBU Spec - 250 cd/m ² max. brightness
Contrast ratio	600:1	1000:1
Response time	8 ms (gray to gray)	14 ms (gray to gray)
Viewing angle	H-178° / V-178°	H-178° / V-178°
H Frequency	31.400 kHz - 75.000 kHz	31.400 kHz - 75.000 kHz
V Frequency	50 Hz / 60 Hz - max. 200 Hz	50 Hz / 60 Hz - max. 200 Hz
Color Space / Gamma / Motion Adapt.		
Color space	YCrCb BT.709 / YCrCb BT.601 / YPbPr / SMPTE240M / RGB / User	YCrCb BT.709 / YCrCb BT.601 / YPbPr / SMPTE240M / RGB / User
SDTV	ITU-R BT.601: PAL (576i), NTSC (480i)	ITU-R BT.601: PAL (576i), NTSC (480i)
HDTV	ITU-R BT.709: 720p, 1035i, 1080i, 1080p	ITU-R BT.709: 720p, 1035i, 1080i, 1080p
Gamma correction	10 bit gamma correction 1.0, 1.5, 2.0, 2.2, 2.35, 2.5 conform to EBU spec.	10 bit gamma correction 1.0, 1.5, 2.0, 2.2, 2.35, 2.5 conform to EBU spec.
Color temperature	3200 K / 5500 K / 6504 K / 9300 K	3200 K / 5500 K / 6504 K / 9300 K
Scaling	Native / 4:3 / 16:9 / Full screen / User	Native / 4:3 / 16:9 / Full screen / User
Motion adaptation	5-line superadaptive 2D comb filters	5-line superadaptive 2D comb filters
Input / Output Terminals		
Video 1	Composite Video / BNC / 1 Vss - 75 Ohm	Composite Video / BNC / 1 Vss - 75 Ohm
DVI-I	DVI-I (single link) up to 1920x1200@60Hz including DDC1 EDID support	DVI-I (single link) up to 1920x1200@60Hz including DDC1 EDID support
VGA	RGB / 15pin Sub-D, 0.7 Vss - 75 Ohm	RGB / 15pin Sub-D, 0.7 Vss - 75 Ohm
3G/HD/SD-SDI (optional - up to 4 inputs)	SMPTE 424M (3 Gb/s) / SMPTE 292M / ITU-R BT.656 / SMPTE 295M	SMPTE 424M (3 Gb/s) / SMPTE 292M / ITU-R BT.656 / SMPTE 295M
Fiber optic modul (optional - up to 4 inputs)	SMPTE 297M - 1260-1620 nm, LC/PC (female), single mode, -23 dBm sensitivity	SMPTE 297M - 1260-1620 nm, LC/PC (female), single mode, -23 dBm sensitivity
External Control		
Ethernet network	Remote control, color alignment, dyn. IMD and Tally / RJ-45 8pin	Remote control, color alignment, dyn. IMD and Tally / RJ-45 8pin
RS 232	Remote control / 9pin Sub-D (female)	Remote control / 9pin Sub-D (female)
GPI	Static IMD and Tally, function key / 15pin Sub-D (male)	Static IMD and Tally, function key / 15pin Sub-D (male)
Mechanical		
Operating temperature	5 °C - 45 °C	5 °C - 45 °C
Power requirement	AC 100 - 240V, 50/60 Hz	AC 100 - 240V, 50/60 Hz
Power consumption (± 5% tolerance)	35W	45W
Power fuse	100 - 240V AC 50/60Hz 1,9A Slow-blow	100 - 240V AC 50/60Hz 1,9A Slow-blow
Dimensions (Width x Height x Depth)	404.4 mm x 265.0 mm x 132.3 mm	503.1 mm x 311.0 mm x 113.8 mm
Weight excluding ND Filter and Mounting (± 3% tolerance)	9.70 kg	8.30 kg
Weight including ND Filter excluding Mounting (± 3% tolerance)	10.60 kg	9.65 kg
Mounting	MIS-D, 100, M4 x 10, C	MIS-D, 100, M4 x 10, C
Color	RAL 9005 Black	RAL 9005 Black

Specifications		
General		
Model	PDP 24W	PDP 32W
Type	Multiformat HDTV / SDTV LCD Monitor - 10 bit panel	Multiformat HDTV / SDTV LCD Monitor - 10 bit panel
Screen size	24" wide format	32" wide format
Aspect ratio	16:10	16:9
Native resolution	1920 x 1200 pixels	1920 x 1080 pixels
Effective screen size	324.00 mm (H) x 518.40 mm (W)	392.85 mm (H) x 698.40 mm (W)
Display colors	1.07 billion	1.06 billion
Brightness / max. brightness	85 cd/m ² conforms to EBU Spec - 400 cd/m ² max. brightness	85 cd/m ² conforms to EBU Spec - 400 cd/m ² max. brightness
Contrast ratio	1000:1	4000:1
Response time	6 ms (gray to gray)	6 ms (gray to gray)
Viewing angle	H-178° / V-178°	H-178° / V-178°
H Frequency	31.400 kHz - 75.000 kHz	31.400 kHz - 75.000 kHz
V Frequency	50 Hz / 60 Hz - max. 200 Hz	50 Hz / 60 Hz - max. 200 Hz
Color Space / Gamma / Motion Adapt.		
Color space	YCrCb BT.709 / YCrCb BT.601 / YPbPr / SMPTE240M / RGB / User	YCrCb BT.709 / YCrCb BT.601 / YPbPr / SMPTE240M / RGB / User
SDTV	ITU-R BT.601: PAL (576i), NTSC (480i)	ITU-R BT.601: PAL (576i), NTSC (480i)
HDTV	ITU-R BT.709: 720p, 1035i, 1080i, 1080p	ITU-R BT.709: 720p, 1035i, 1080i, 1080p
Gamma correction	10 bit gamma correction 1.0, 1.5, 2.0, 2.2, 2.35, 2.5 conform to EBU spec.	10 bit gamma correction 1.0, 1.5, 2.0, 2.2, 2.35, 2.5 conform to EBU spec.
Color temperature	3200 K / 5500 K / 6504 K / 9300 K	3200 K / 5500 K / 6504 K / 9300 K
Scaling	Native / 4:3 / 16:9 / Full screen / User	Native / 4:3 / 16:9 / Full screen / User
Motion adaptation	5-line superadaptive 2D comb filters	5-line superadaptive 2D comb filters
Input / Output Terminals		
Video 1	Composite Video / BNC / 1 Vss - 75 Ohm	Composite Video / BNC / 1 Vss - 75 Ohm
DVI-I	DVI-I (single link) up to 1920x1200@60Hz including DDC1 EDID support	DVI-I (single link) up to 1920x1200@60Hz including DDC1 EDID support
VGA	RGB / 15pin Sub-D, 0.7 Vss - 75 Ohm	RGB / 15pin Sub-D, 0.7 Vss - 75 Ohm
3G/HD/SD-SDI (optional - up to 4 inputs)	SMPTE 424M (3 Gb/s) / SMPTE 292M / ITU-R BT.656 / SMPTE 295M	SMPTE 424M (3 Gb/s) / SMPTE 292M / ITU-R BT.656 / SMPTE 295M
Fiber optic modul (optional - up to 4 inputs)	SMPTE 297M - 1260-1620 nm, LC/PC (female), single mode, -23 dBm sensitivity	SMPTE 297M - 1260-1620 nm, LC/PC (female), single mode, -23 dBm sensitivity
External Control		
Ethernet network	Remote control, color alignment, dyn. IMD and Tally / RJ-45 8pin	Remote control, color alignment, dyn. IMD and Tally / RJ-45 8pin
RS 232	Remote control / 9pin Sub-D (female)	Remote control / 9pin Sub-D (female)
GPI	Static IMD and Tally, function key / 15pin Sub-D (male)	Static IMD and Tally, function key / 15pin Sub-D (male)
Mechanical		
Operating temperature	5 °C - 45 °C	5 °C - 45 °C
Power requirement	AC 100 - 240V, 50/60 Hz	AC 100 - 240V, 50/60 Hz
Power consumption (± 5% tolerance)	75W	150W
Power fuse	100 - 240V AC 50/60Hz 1,9A Slow-blow	100 - 240V AC 50/60Hz 3,2A Slow-blow
Dimensions (Width x Height x Depth)	553.8 mm x 358.8 mm x 132.3 mm	764.5 mm x 456.5 mm x 157.0 mm
Weight excluding ND Filter and Mounting (± 3% tolerance)	10.30 kg	18.30 kg
Weight including ND Filter excluding Mounting (± 3% tolerance)	12.22 kg	21.60 kg
Mounting	MIS-D, 100, M4 x 10, C	MIS-F, 200, 200, M6 x 10, C
Color	RAL 9005 Black	RAL 9005 Black

Specifications		
General		
Model	PDP 37W	PDP 42W
Type	Multiformat HDTV / SDTV LCD Monitor - 10 bit panel	Multiformat HDTV / SDTV LCD Monitor - 10 bit panel
Screen size	37" wide format	42" wide format
Aspect ratio	16:9	16:9
Native resolution	1920 x 1080 pixels	1920 x 1080 pixels
Effective screen size	460.89 mm (H) x 819.36 mm (W)	523.26 mm (H) x 930.24 mm (W)
Display colors	1.06 billion	1.06 billion
Brightness / max. brightness	85 cd/m ² conforms to EBU Spec - 500 cd/m ² max. brightness	85 cd/m ² conforms to EBU Spec - 500 cd/m ² max. brightness
Contrast ratio	1400:1	1000:1
Response time	5 ms (gray to gray)	9 ms (gray to gray)
Viewing angle	H-178° / V-178°	H-178° / V-178°
H Frequency	31.400 kHz - 75.000 kHz	31.400 kHz - 75.000 kHz
V Frequency	50 Hz / 60 Hz - max. 200 Hz	50 Hz / 60 Hz - max. 200 Hz
Color Space / Gamma / Motion Adapt.		
Color space	YCrCb BT.709 / YCrCb BT.601 / YPbPr / SMPTE240M / RGB / User	YCrCb BT.709 / YCrCb BT.601 / YPbPr / SMPTE240M / RGB / User
SDTV	ITU-R BT.601: PAL (576i), NTSC (480i)	ITU-R BT.601: PAL (576i), NTSC (480i)
HDTV	ITU-R BT.709: 720p, 1035i, 1080i, 1080p	ITU-R BT.709: 720p, 1035i, 1080i, 1080p
Gamma correction	10 bit gamma correction 1.0, 1.5, 2.0, 2.2, 2.35, 2.5 conform to EBU spec.	10 bit gamma correction 1.0, 1.5, 2.0, 2.2, 2.35, 2.5 conform to EBU spec.
Color temperature	3200 K / 5500 K / 6504 K / 9300 K	3200 K / 5500 K / 6504 K / 9300 K
Scaling	Native / 4:3 / 16:9 / Full screen / User	Native / 4:3 / 16:9 / Full screen / User
Motion adaption	5-line superadaptive 2D comb filters	5-line superadaptive 2D comb filters
Input / Output Terminals		
Video 1	Composite Video / BNC / 1 Vss - 75 Ohm	Composite Video / BNC / 1 Vss - 75 Ohm
DVI-I	DVI-I (single link) up to 1920x1200@60Hz including DDC1 EDID support	DVI-I (single link) up to 1920x1200@60Hz including DDC1 EDID support
VGA	RGB / 15pin Sub-D, 0.7 Vss - 75 Ohm	RGB / 15pin Sub-D, 0.7 Vss - 75 Ohm
3G/HD/SD-SDI (optional - up to 4 inputs)	SMPTE 424M (3 Gb/s) / SMPTE 292M / ITU-R BT.656 / SMPTE 295M	SMPTE 424M (3 Gb/s) / SMPTE 292M / ITU-R BT.656 / SMPTE 295M
Fiber optic modul (optional - up to 4 inputs)	SMPTE 297M - 1260-1620 nm, LC/PC (female), single mode, -23 dBm sensitivity	SMPTE 297M - 1260-1620 nm, LC/PC (female), single mode, -23 dBm sensitivity
External Control		
Ethernet network	Remote control, color alignment, dyn. IMD and Tally / RJ-45 8pin	Remote control, color alignment, dyn. IMD and Tally / RJ-45 8pin
RS 232	Remote control / 9pin Sub-D (female)	Remote control / 9pin Sub-D (female)
GPI	Static IMD and Tally, function key / 15pin Sub-D (male)	Static IMD and Tally, function key / 15pin Sub-D (male)
Mechanical		
Operating temperature	5 °C - 45 °C	5 °C - 45 °C
Power requirement	AC 100 - 240V, 50/60 Hz	AC 100 - 240V, 50/60 Hz
Power consumption (± 5% tolerance)	180W	280W
Power fuse	100 - 240V AC 50/60Hz 3,2A Slow-blow	100 - 240V AC 50/60Hz 3,2A Slow-blow
Dimensions (Width x Height x Depth)	881.5 mm x 521.5 mm x 157.0 mm	960.4 mm x 554.0 mm x 157.0 mm
Weight excluding ND Filter and Mounting (± 3% tolerance)	27.15 kg	29.50 kg
Weight including ND Filter excluding Mounting (± 3% tolerance)	31.40 kg	34.50 kg
Mounting	MIS-F, 200, 200, M6 x 10, C	MIS-F, 200, 200, M6 x 10, C
Color	RAL 9005 Black	RAL 9005 Black

High Quality Factory Measurement Procedure

HD2line Pro Broadcast Displays are designed for professionals. To ensure the high quality standard, each display undergoes an intensive quality control process before delivery. For specifying and assessing the performance it is necessary to look at the following parameters:

- Display Panel Resolution
- Color Reproduction Accuracy and Consistency
- Viewing Angle
- Response Time
- Signal Processing Performance
- Video Delay

The specifications and tolerances for the pre-selected displays are defined in individual test reports. Please ask for a detailed whitepaper of the different models.



Distances don't matter

This statement manifests its fullest meaning in the area of service. Penta's personnel is working alongside you. Our international partners ensure the local availability of spare parts for the user. Even when an ocean seems to separate us, contact is never broken.



Sales

Attentive to your needs, our sales engineers propose solutions tailored to your objectives. A full scale demonstration can be provided to help you validate your needs.

Maintenance and Support

Regular maintenance is the best way to protect your investment. We have specific spare units on stock to minimise downtime. Maintenance contracts are also available and can be tailored to your needs.