Specifications

Model Name		**MS53i2/AR** (Special AR Coating) **MS53i2/F** (Protective Filter)	**MS33i2/AR** (Special AR Coating) **MS33i2/F** (Protective Filter)	**MS23i2/AR** (Special AR Coating) **MS23i2/F** (Protective Filter)
LCD Panel	Technology	21.3-inch, TFT Monochrome, Active matrix IPS technology	20.8-inch, TFT Monochrome, Active matrix IPS technology	21.3-inch, TFT Monochrome, Active matrix IPS technology
	Display Area	422.4mm X 337.9mm	423.9mm X 318.0mm	432mm X 324mm
	Pixel Pitch	0.165mm X 0.165mm	0.207mm X 0.207mm	0.270mm X 0.270mm
	Contrast Ratio	850 : 1 (typ)	900 : 1 (typ)	700 : 1 (typ)
	Maximum Luminance	1100cd/m² typ. (calibrated to 500cd/m² and 410cd/m² by factory default)	1000cd/m² typ. (calibrated to 500cd/m² and 410cd/m² by factory default)	1800cd/m² typ. (calibrated to 500cd/m² and 410cd/m² by factory default)
	Viewing Angle	170° vertical and horizontal (Wide view)	170° vertical and horizontal	←
Visual Performance	Native Resolution	2048 X 2560, ISD ON: 2048 X 7680 (sub-pixel)	1536 X 2048, ISD ON: 1536 X 6144 (sub-pixel)	1200 X 1600, ISD ON: 1200 X 4800 (sub-pixel)
	Grayscale	256 shades of gray out of 12241 shades of gray. 1024 shades of gray (DisplayPort 10bit input) Simultaneous display of 2048 shades of gray (ISD ON:1276 shades of gray) are possible with the customized viewer.	←	←
Interface	Input Signal	DVI-D (DVI 1.0 compliant) DisplayPort (DisplayPort 1.1a compliant)	←	←
	Plug and Play	DDC2B compliant	←	←
Input Power Supply	Input	100V ~ 240V (±10%) 50/60Hz	←	←
	Maximum Power Consumption	90W typ. (with power management feature)	←	←
Features	Calibration Control	Luminance, Gamma, Capability of saving 3 sets of LUT settings (An optional calibration kit is required.)	←	←
	OSD Information Display	Model name, Serial No., Total operating time, Calibration settings (Operating time from Last Calibration, Luminance, Gamma, etc.), Current luminance, etc.	←	←
	USB Hub	USB Rev. 2.0 compliant, Self-powered USB upstream connector (x1), USB downstream connector (x2)	←	←
	Other Features	Luminance Uniformity Correction, Hardware Pivot, LED indicator, Configurations switching function, ISD Technology	←	←
Approvals		UL60601-1, CSA C22.2 No. 601.1, MDD/CE, FCC-B, VCCI-B, RoHS, (FDA510(k), CCC*: pending)	←	←
Physical Characteristics	Dimensions (incl. tilt stand)	Landscape : 474.5 (W) X 479.9 / 541.4 (H) X 220 (D)mm	Landscape : 474 (W) X 468.4 / 529.9 (H) X 220 (D)mm	←
		Portrait : 390 (W) X 522.2 / 583.7 (H) X 220 (D)mm	Portrait : 367 (W) X 521.9 / 583.4 (H) X 220 (D)mm	←
	Weight	Net: approx. 12kg	←	←
	Tilt stand	Tilt, Swivel, Portrait / Landscape	←	←
	Mount	100mm VESA mounting	←	←
	Security Slot	On the back of the panel and the tilt stand	←	←
Accessories		Power cord (3P), DVI cable, USB cable, Operation manual *Cleaning kit (Special AR coating model only)	←	←

Model Name		**CCL356i2/AR** (Special AR Coating) **CCL356i2/F** (Protective Filter)	**CCL256i2/AR** (Special AR Coating) **CCL256i2/F** (Protective Filter)
LCD Panel	Technology	21.3-inch, TFT Color Active matrix IPS technology	21.3-inch, TFT Color Active matrix IPS technology
	Display Area	433.152mm X 324.864mm	432mm X 324mm
	Pixel Pitch	0.2115mm X 0.2115mm	0.270mm X 0.270mm
	Contrast Ratio	750 : 1 (typ)	900 : 1 (typ)
	Maximum Luminance	800cd/m² typ. (calibrated to 410cd/m² and 300cd/m² by factory default)	950cd/m² typ. (calibrated to 410cd/m² and 300cd/m² by factory default)
	Viewing Angle	170° vertical and horizontal	←
Visual Performance	Native Resolution	1536 X 2048	1200 X 1600
	Grayscale	16.77million colors out of 68 billion color 1073.74 million colors (DisplayPort 10bit input)	←
Interface	Input Signal	DVI-D (DVI 1.0 compliant), DisplayPort (DisplayPort 1.1a compliant)	←
	Plug and Play	DDC2B compliant	←
Input Power Supply	Input	100V ~ 240V (±10%) 50/60Hz	←
	Maximum Power Consumption	120W typ. (with power management feature)	←
Features	Calibration Control	Luminance, Gamma, Capability of saving 3 sets of LUT settings (An optional calibration kit is required.)	←
	OSD Information Display	Model name, Serial No., Total operating time, Calibration settings (Operating time from Last Calibration, Luminance, Gamma, etc.), Current luminance, etc.	←
	USB Hub	USB Rev. 2.0 compliant, Self-powered USB upstream connector (x1), USB downstream connector (x2)	←
	Other Features	Luminance and Color Uniformity Correction, Hardware Pivot, LED indicator, Configurations switching function	←
Approvals		UL60601-1, CSA C22.2 No. 601.1, MDD/CE, FCC-B, VCCI-B, RoHS, (FDA510(k), CCC*: pending)	←
Physical Characteristics	Dimensions (incl. tilt stand)	Landscape : 474 (W) X 468.4 / 529.9 (H) X 220 (D)mm	←
		Portrait : 367 (W) X 521.9 / 583.4 (H) X 220 (D)mm	←
	Weight	Net: approx. 12kg	←
	Tilt stand	Tilt, Swivel, Portrait / Landscape	←
	Mount	100mm VESA mounting	←
	Security Slot	On the back of the panel and the tilt stand	←
Accessories		Power cord (3P), DVI cable, USB cable, Operation manual *Cleaning kit (Special AR coating model only)	←

TOTOKU has obtained ISO14001 and ISO9001/ISO13485 certification which are international standards concerning environment management and quality control respectively.

ISO 14001 JQA-EM0674

ISO 9001 ISO 13485

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Please contact the distributor below with inquiries and orders.

2010.11 i2 model-A-1K-2010.11 SE

TOTOKU

MS&CCL Series

New model i2

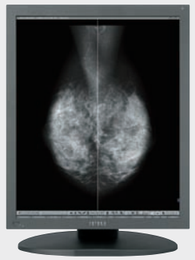
Flat Display Systems for Medical Imaging

Higher Image Quality and Total Management

—— DICOM Conformance ——

Monochrome

5MP
15MsP



5 Megapixel + ISD 21.3" Monochrome Display

MS53i2 — MS53i2/AR (Special AR Coating) MS53i2/F (Protective Filter)

21.3" | DisplayPort & DVI-D | 1100 cd/m² | 850:1 | Calibration function | 16Bit LUT | 11-bit display | Color/ Monochrome Conversion | OSD | Luminance Uniformity Correction | Hardware Pivot | LED Indicator

3MP
9MsP

3 Megapixel + ISD 20.8" Monochrome Display

MS33i2 — MS33i2/AR (Special AR Coating) MS33i2/F (Protective Filter)

20.8" | DisplayPort & DVI-D | 1000 cd/m² | 900:1 | Calibration function | 16Bit LUT | 11-bit display | Color/ Monochrome Conversion | OSD | Luminance Uniformity Correction | Hardware Pivot | LED Indicator

2MP
6MsP

2 Megapixel + ISD 21.3" Monochrome Display

MS23i2 — MS23i2/AR (Special AR Coating) MS23i2/F (Protective Filter)

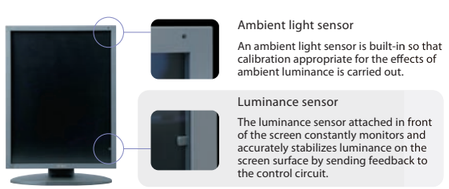
21.3" | DisplayPort & DVI-D | 1800 cd/m² | 700:1 | Calibration function | 16Bit LUT | 11-bit display | Color/ Monochrome Conversion | OSD | Luminance Uniformity Correction | Hardware Pivot | LED Indicator

Reliable Quality and Stability

Luminance stabilizing system λ-Sentinel II

λ-Sentinel II consists of a luminance sensor and a luminance control circuit. The luminance sensor in integrated into the front bezel, directly against the screen, and constantly monitors and accurately stabilizes luminance on the screen surface by sending feedback instantaneously to the control circuit.

- With luminance fluctuation caused by the LCD module taken into account, highly accurate luminance control is achieved.
- Actual luminance measurements including intermediate luminance are taken on the screen surface.

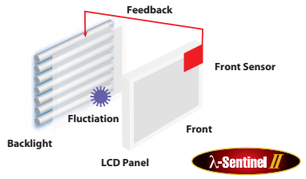


Ambient light sensor

An ambient light sensor is built-in so that calibration appropriate for the effects of ambient luminance is carried out.

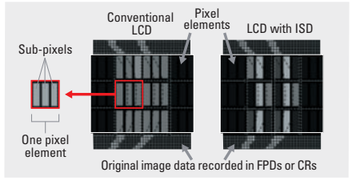
Luminance sensor

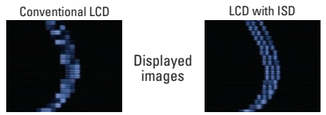
The luminance sensor attached in front of the screen constantly monitors and accurately stabilizes luminance on the screen surface by sending feedback to the control circuit.



ISD (Independent Sub-pixel Drive) technology

Driven by each sub-pixel value corresponding to detailed information recorded in an original image, three times resolution enhancement is achieved.
In addition, up to 1276 shades of gray are now simultaneously displayable by the upgraded ISD technology.

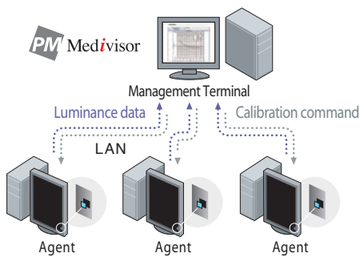




*Customized viewer software is required to display images with enhanced resolution by the ISD technology
*ISD technology is built in MS series only

Remote grayscale check and remote calibration functions

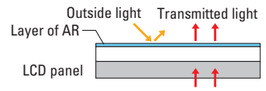
Conformance testing to DICOM GSDF and calibration can be remotely accomplished. These features minimize the burden on display administrators.



Special AR Coating for Film-like Black and Improved Sharpness

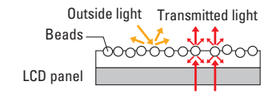
TOTOKU's new Special AR Coating technology addresses properties of focus, noise reduction, contrast, and viewing angle achieving film-like black and accurate reproduction of images.

Special AR coating



The special AR coating reduces diffuse reflection and improves properties of noise, focus, contrast and viewing angle.

General AG (Anti-) processing

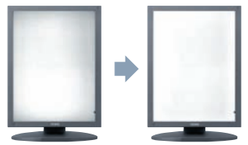


Provided beads diffusely reflect the light to reduce background appearance mirrored on the screen. However, transmitted light (Displayed image) is also diffusely reflected causing focus loss and increased noise.

*The images explain general ideas of each mechanism and may be different from the actual structures.

Uniformity equalizer

Is built in to achieve highly accurate luminance and color uniformity across the screen.

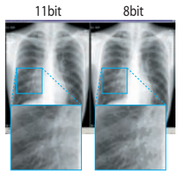


* Color uniformity equalizer is built in color models only.
*Images shown are for illustrative purposes only.

Simultaneous display of 2048 shades of gray

Combined with a viewer software, 2048 shades of grapy (11 bit) can be simultaneously displayed. It realizes smoother grayscale display required for medical image displays.

*A viewer software that supports TOTOKU's multi-shade display system is required for 2048 shades of gray simultaneous display.
*1276 shades of gray are simultaneously displayable by the ISD technology.
*Color models display 256 shades of gray(8bit) or 1024 shades of gray(10bit) out of 4081 shades of gray.
*Images shown are for illustrative purposes only.



Next Generation Interface - DisplayPort

In addition to a DVI port, each i2 series display includes a new digital display interface, "DisplayPort". When using the DisplayPort, up to 1024 or 10-bit shades of gray are simultaneously displayed. This enables smooth and accurate display of subtle differences in shades of gray. Additionally, 1073.74 million colors (10-bit in each R, G, B) are simultaneously displayed on our color model.

*Customized viewer software and graphics card are required to display 10-bit images.

User-friendly Functions

User-selectable display configurations

Luminance/gamma settings are selectable from three preset levels according to the needs.
User-selectable configurations enable stress free operations without specialized settings.

Luminance: 410cd/m²
Gamma: DICOM GSDF

Luminance: 300cd/m²
Gamma: DICOM GSDF

Luminance: 300cd/m²
Gamma: Gamma 2.2

OSD information display

At your fingertips, you can view current display status and information, including actual measurement of luminance, calibration settings, total operating hours as well as model name and serial number.

LED indicator

A glance at the LED indicator tells you the display's current operating status.

Luminance is being stabilized.

Luminance is being adjusted. Wait until the LED goes off.

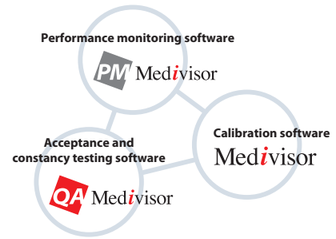
The display is in power save mode.

An error is detected.

Display Quality Control

Medivisor Series
(Optional software)

The Medivisor Series is a series of software to collectively support display quality control from acceptance and periodic constancy testing to constant monitoring, to calibration.



Ecological Technology – Considering the Global Environment

Totoku is committed to providing high performance display systems that are ecological and environmentally friendly. We strive to create green IT initiatives and be a part of building a clean energy future. In effort to achieve this, we have incorporated new power-saving features in our i2 series displays.
Our advanced power saving function dims the backlight as the screensaver activates, thereby reducing power consumption and preventing unnecessary backlight deterioration, resulting in a longer lasting display. Our internal power supply system includes a newly improved power save mode, which allows the display to enter standby mode with less than 2 watts of energy consumption.

*Optional software Calibration Kit is required to set up the Advanced Power Savings feature.

Color

3MP

3 Megapixel 21.3" Color Display

CCL356i2 — CCL356i2/AR (Special AR Coating) CCL356i2/F (Protective Filter)

21.3" | DisplayPort & DVI-D | 800 cd/m² | 750:1 | Calibration function | 16Bit LUT | 10-bit display | OSD | Luminance Uniformity Correction | Hardware Pivot | LED Indicator

2MP

2 Megapixel 21.3" Color Display

CCL256i2 — CCL256i2/AR (Special AR Coating) CCL256i2/F (Protective Filter)

21.3" | DisplayPort & DVI-D | 950 cd/m² | 900:1 | Calibration function | 16Bit LUT | 10-bit display | OSD | Luminance Uniformity Correction | Hardware Pivot | LED Indicator

Environmental Regulations

RoHS

TOTOKU displays and graphics cards are compliant with the European Union Directive 2002/95/EC for the Restriction of the use of the Hazardous Substances in Electrical and Electronic Equipment (RoHS).

* For details, please refer to our website.

Worldwide Medical Safety and EMI standards

TOTOKU medical image displays comply with various stringent worldwide medical standards. They ensure safety and reliability required for use in medical facilities.

CLASSIFIED C UL US | CE | FC Tested To Comply With FCC Standards FOR HOME OR OFFICE USE | VCCI