DuraMON 27 S Series

DuraMon 27 S-Line

User Reference Manual

Disclaimer

ISIC A/S makes no representation or warranties with respect to the contents or use of this manual, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, ISIC A/S reserves the right to revise this publication and to make changes to its content at any time, without obligation to notify any person or entity of such revisions or changes.
Image sticking: If the monitor is operated with static images (logo's etc.) it will inevitably lead to images sticking on the display. Image sticking can be reduced by regular operating the monitor with moving pictures that is designed for the purpose.
Front panel control touch buttons should not be considered operational controls for radar, navigational systems, and equipment. Front panel controls are for operation of the monitor only.

FCC Warning

Computing devices and peripherals generate and radiate radio frequency energy, and if not installed and used in accordance with the instructions advised by ISIC A/S, it may cause interference to radio communication.

The DuraMON 27 S series, manufactured by ISIC A/S, is designed to comply with the emerging generic EEC standards that cover applications in maritime environments.

Classification

The monitor is classified as "protected from the weather" according to IEC 60945 ed.4 (former class b).

Approvals

Approval according to IEC 60945: Ed. 4 2002/COR1:2008 and IACS E10 Rev. 7 Oct. 2018, Maritime navigation and radio communication equipment and systems – General requirements.

ISIC A/S is complying with the WEEE directive within the European Union, stating that electronic and electric products must be collected separately.
Products are marked according to the directive.

ISIC A/S
Edwin Rahrs Vej 54
DK-8220 Brabrand
Denmark

Phone: +45 70 20 70 77
Web: http://www.isic-systems.com
Mail: isic@isic-systems.com

Table of Contents

1 Features

Congratulations on your product purchase of DuraMON 27 S series.
This short form manual is designed to get you started working with your new DuraMON 27 S.

DuraMON 27 S series of monitors are all made as rugged monitors especially designed for the demanding operating conditions at sea.

The DuraMON 27 S series are tested for full compliance to marine-standards IACS E10 and IEC 60945.
The monitor comes with excellent brightness and contrast levels that, together with wide viewing angles, ensure high readability, making it very eye-friendly. For the best picture quality, always use a double shielded cable with ferrites, like the one supplied with the monitor.

2 x DisplayPort
Feature control support for DDC/CI VCP commands via DisplayPort interface and USB interface
Dimming control (1cd to 100%)
Anti-Reflective coated cover glass
IP56 protected front, mounted in sealed console.
USB Touch (Optional)

2 General considerations at Installation and Operation

DuraMON 27 S series are designed to work at conditions according to IEC 60945. However, keeping the temperature and vibration level at a minimum will extend the lifetime of the product. ISIC recommend operating this product at normal room temperature (20-25°C), with the lowest level of vibration and humidity.

2.1 Installation

To obtain the best possible operating conditions, please note the following precautions.

- Cooling.
  When mounting DuraMON 27 S series in cabinet/console, please ensure that air can flow freely around the product cabinet, to avoid any unnecessary rise in temperature. If it is not possible to have an adequate natural airflow, please ensure forced airflow inside the console.

- Sunlight
  If the unit can be exposed to direct sunlight, there is a potential risk that the unit can be overheated. Please take measures to prevent direct sunlight. Do also consider forced cooling on the back of the unit.

Please refer to Mechanical Outline for installation

2.1.1 Mechanical Outline

DuraMON 27 S: 11006-000

2.1.2 Desktop/Ceiling mounting kit with tilt

DuraMON 27 S: 10123-027

2.1.3 Console mounting kit (Sealing IP44):

DuraMON 27 S: 10585-027

2.1.4 Compass safe distance

Test object / condition	Minimum Compass safe distance [cm] (5.4°/H deviation or a horizontal magnetic flux of 0.094µT)	Minimum Compass safe distance [cm] (18°/H deviation or a horizontal magnetic flux of 0.313µT)
DuraMON 27 S	155 cm	100 cm

2.1.5 Power Consumption

Test object / condition	Pmax [W] DC	Pmax [VA] AC
DuraMON 27 S	46	46

In standby mode, the product will still consume power.
To cut off all power consumption, it is necessary to disconnect its supply power.

2.1.6 Inrush current

Test object / condition	Current[A] @ 24VDC
DuraMON 27 S	10

Test object / condition	Current[A] @ 115VAC	Current[A] @ 230VAC
DuraMON 27 S	55A	100A

2.2 Operation

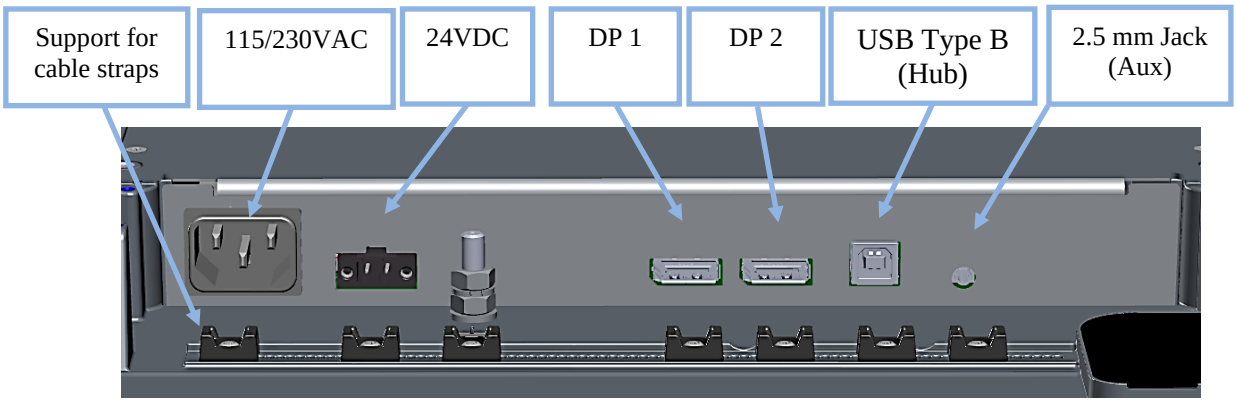
2.2.1 Warm up

To obtain correct display colors and luminance, a warm-up period of minimum 30 minutes is required.

2.2.2 Display

Test object / condition	Viewing Distance
DuraMON 27 S	1070mm

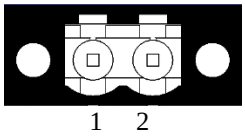
3 DuraMON 27 S connections



3.1 24VDC supply (optional)

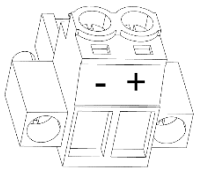
3.1.1 Models with 24VDC (18-36VDC) supply voltage

24 VDC: Nominal input voltage. Galvanic marine isolated with reverse polarity protection.
18-36VDC: Operating voltage range.



Terminal	Connection	Wire compliance
1	0VDC	Multicore AWG16-12 (1-4 mm²)
2	+24VDC	Multicore AWG16-12 (1-4 mm²)

Mating part: Weidmüller BLZP5.08HC/02/180F

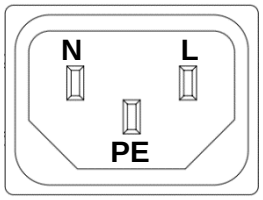


Tool: 0.6x3.5mm slotted (flat headed) screwdriver

3.2 110/230VAC supply

3.2.1 Models with 110/230VAC supply voltage

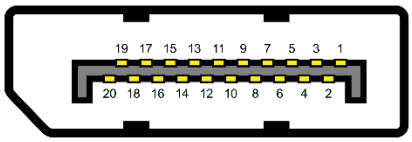
115 / 230 VAC: Nominal input AC voltage.
90 - 264 VAC: Operating AC voltage range.
47 - 63 Hz: Operating frequency range



IEC plug type C14

Mating connector: IEC type C13

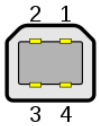
3.3 DisplayPort 1.2 (DP) receptacle



Mating part: Male full size DisplayPort connector
with mechanical latch.
Note! Only use DisplayPort cables with pin 20 unconnected

Pin	Description
1	ML_Lane 0 (p)
2	GND
3	ML_Lane 0 (n)
4	ML_Lane 1 (p)
5	GND
6	ML_Lane 1 (n)
7	ML_Lane 2 (p)
8	GND
9	ML_Lane 2 (n)
10	ML_Lane 3 (p)
11	GND
12	ML_Lane 3 (n)
13	CONFIG1
14	CONFIG 2
15	AUX CH (p)
16	GND
17	AUX CH (n)
18	Hot plug
19	Return
20	DP_PWR

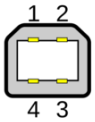
3.4 USB Type B receptacle



Type-B

Pin	Description
1	VBUS (+5V)
2	Data-
3	Data+
4	GND

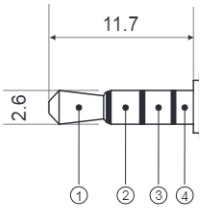
Mating part: Plug USB type B



Type B

3.5 2.5 mm jack (reserved for future use)

Mating part: 2.5 mm Jack for half duplex RS-485



Pin	Description
1	5VDC (Only for ISIC applications)
2	RS-485 A
3	RS-485 B
4	GND

4 Technical specifications DuraMON 27 S

Please refer to datasheet for the purchased variant
DuraMON 27 S: 10354-000

5 DuraMON S Series Communication Interface

DuraMON S series supports 2 types of communication protocols
DDC/CI VCP command via DisplayPort
Virtual Serial Communication via USB interface.

5.1 Virtual COM Port

The virtual COM port needs a dedicated driver. It can be located here:
isic-systems.dk →After Sales→Software Download
Right click the download icon and select "Save As".

For the command interface please refer to Serial Communication Protocol 04924-002

The type of the product can be queried by sending the 'TYP' command to the Virtual COM Port.
Example:

Monitor	Response from monitor
DuraMON 27 S	DM270

5.2 DDC/CI VCP Command

Please refer to DDC/CI VCP Command protocol 09370-002.

6 USB Touch

For models ordered with multitouch only:
Monitors with optional multi-PCAP touch sensor comply with Windows 8 (or newer) standard USB HID drivers. Linux operating systems might come with the HID driver as part of the Linux kernel, compatibility is not guaranteed.

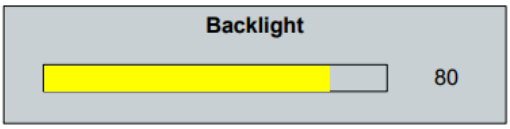
7 Buzzer

For models ordered with Buzzer only:
Buzzer can be activated by serial command, please refer to Serial Communication Protocol 04924-002

8 Display backlight luminance (Dimming)

8.1 Backlight Luminance control

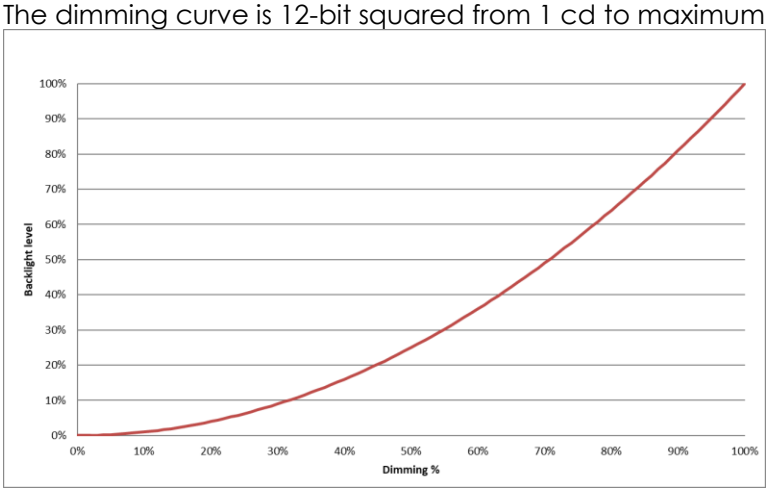
Display luminance can be controlled by Communication interfaces.



For models with front panel controls: please refer to section 11.4 UP and DOWN buttons

8.2 Dimming curve

The dimming curve is 12-bit squared from 1 cd to maximum brightness for display.



9 ECDIS mode

For ECDIS models only

To obtain correct display colors and luminance, a warm-up period of minimum 30 minutes is required.

Be aware that use of the backlight, brightness, or contrast controls in ECDIS mode may inhibit visibility of information particularly at night!

9.1 ECDIS operational controls

All operational controls for radar, navigational systems and equipment must be operated from such systems and equipment controls.

Warning: Operating the front panel control up or down touch button in will cause incorrect ECDIS backlight setting, and the orange status indicator will illuminate as a warning. Pressing UP and DOWN together at the same time will restore preset ECDIS backlight luminance

9.2 ECDIS setup

To setup ECDIS on the system a color token table must be downloaded from the monitor to the ECDIS application.
USB interface: Please refer to Serial Communication Protocol 04924-002 for details.
DDC interface: Please refer to DDC/CI VCP Command protocol 09370-002 for details.

10 DuraMON 27 S LED indicators

The LEDs are not marked on the front and are only visible when activated.
LED brightness follows the LCD backlight setting.

10.1 LED indicator behavior

10.1.1 ECDIS/Status LED indicating color

Orange:	Warning: - Standby - No signal - Out of ECDIS mode (DAY/DUSK/NIGHT) (for ECDIS models only)
Green:	In ECDIS mode DAY/DUSK/NIGHT (for ECDIS models only)
No light:	OK - Normal operation (for non-ECDIS models only)

10.1.2 Power LED indicating color

Blue:	Power is connected to the product.
No blue light:	No power

10.2 Optional (Custom) LED indicator behavior

10.2.1 Optional ECDIS/Status LED indicating color

Orange:	"Warning" - Standby - No signal - Out of ECDIS range (DAY/DUSK/NIGHT) (for ECDIS models only)
Green:	N/A
LCD image + No light:	OK - Normal operation
no LCD image + No light:	No power

10.2.2 Optional Power LED indicating color

Blue:	N/A

11 Front panel controls

For models with front panel touch button interface only.
Please refer to disclaimer on page 2.

11.1 Touch button interface

The front panel control icons are illuminated and will follow the brightness level of the Panel PC backlight luminance.

11.2 On / Standby

For models with front panel controls only:

Warning: (For ECDIS models only) the Standby button ⏻ should not be operated in ECDIS mode. All controls should be handled from the radar, navigational systems, and equipment.

On, press the standby button ⏻ to power on the Panel PC.

Shutdown can be activated by pressing the ⏻ button for 5 seconds.

Hard-OFF can be activated by pressing the ⏻ button for 10 seconds.

11.3 UP and DOWN buttons

Warning: (For ECDIS models only) Operating the front panel control up or down touch button in will cause incorrect ECDIS backlight setting, and the orange status indicator will illuminate as a warning. Pressing UP and DOWN together at the same time will restore preset ECDIS backlight luminance

UP and DOWN buttons will adjust the Panel PC backlight luminance.

11.4 Advanced OSD

With the Advanced OSD (On Screen Display) you can modify the settings and control the special features of the DuraMON as described in **Appendix A**.

Advanced OSD can be operated by Communication Interfaces.

For models with front panel controls "Back" and "Select" interfaces only:
To enter the Advanced OSD, press both the "Back" and "Select" buttons at the same time.
To navigate the Advanced OSD use the "Up" and "Down" buttons and press "Select" to select a

specific setting. To get back to the previous menu point, press the “Back” button.

12 Troubleshooting

Problem	Cause	Solutions
No picture on display	Backlight luminance set to minimum	Increase backlight
No picture on display	Monitor turned off	Turn on the monitor
No picture on display	No input signal present	Apply signal
No picture on display	No power cord connected	Apply power
The unit will not turn on.	Unknown	Please do not try to open the unit. Send it to ISIC A/S for repair.

13 Servicing the unit

In case the unit still fails after following the troubleshooting send the unit to ISIC for repair. There are no user serviceable parts inside and to ensure ECDIS compliance the monitor must be recalibrated at ISIC.

14 Terms, Acronyms and abbreviations

OSD: On Screen Display

15 ISIC info / Support

In case you have inquiries or problems with your DuraMON 27 S, you have a number of possibilities to get support.

Company name:	ISIC A/S
Head office:	Edwin Rahrs Vej 54 DK – 8220 Brabrand Denmark
Shipping address:	Holmstrupgaardvej 5 DK-8220 Brabrand Denmark
Telephone:	+45 70 20 70 77
Email:	isic@isic-systems.com
www:	www.isic-systems.com
VAT number:	DK 16 70 45 39
Bank Address:	Handelsbanken A/S Havneholmen 29 DK-1561 København V Denmark
Bank Code:	0892
IBAN DKK:	DK53 0892 0001 0159 69
IBAN EUR:	DK48 0892 0003 0026 19
IBAN USD:	DK26 0892 0003 0026 27
SWIFT:	HANDDKKK
Contacts:	
RFQ's:	By mail to sales@isic-systems.com
Orders:	By mail to orders@isic-systems.com
Support:	Via homepage www.isic-systems.com under aftersales By mail to service@isic-systems.com During office-hours (Mo-Fr: CET 0800 - 1500) at +45 70 20 70 77
Service:	Before shipment for service Request Return Material Authorization number at homepage https://isic-systems.com/after-sales/tech-support-rma/ By mail to service@isic-systems.com

16 Revision history

Rev 0	2024-09-15	ASP	Preliminary
Rev A	2024-12-12	ADE	Initial Release
Rev A	2024-12-13	NHL	Updated copyright year. Removed VGA section

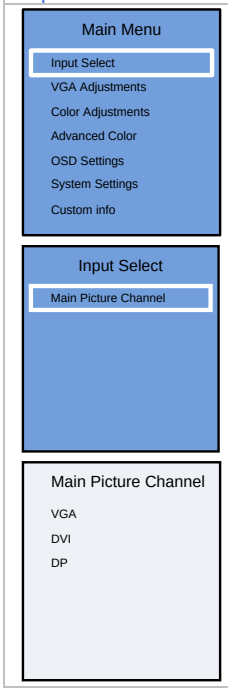
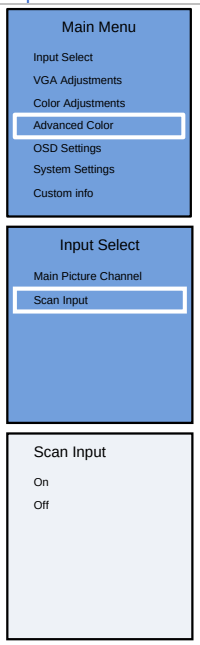
17 Appendix A: Advanced OSD Menu

With the Advanced OSD (On Screen Display) you can modify the settings and control the special features of the DuraMON

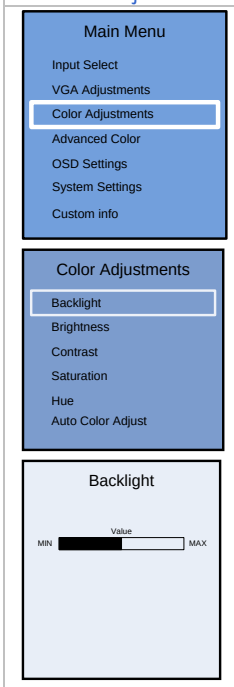
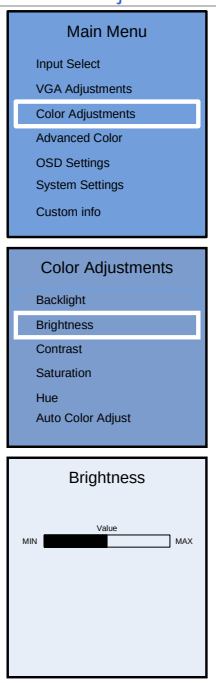
Advanced OSD can also be operated by Communication Interfaces.

For models with front panel controls "Back" and "Select" interfaces only:
To enter the Advanced OSD, press both the "Back" and "Select" buttons at the same time.
To navigate the Advanced OSD use the "Up" and "Down" buttons and press "Select" to select a specific setting. To get back to the previous menu point, press the "Back" button.

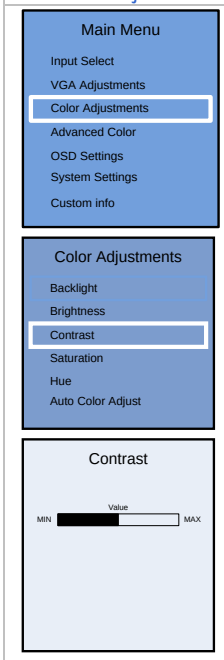
17.1 Input select

Input Select – Main Picture Channel		Input Select – Scan Input	
	The Main Picture Channel can be selected between all available inputs (VGA, Display Port and DVI.		Scans Inputs for active source. Default is On.

17.2 Color adjustments (not available in ECDIS mode)

Color Adjustment – Backlight		Color Adjustment – Brightness	
	It is possible to set the backlight level. Default is 50%. *Unless popups or OSD is present it is possible to press the "UP" or "DOWN" button to adjust the backlight level and then press "ENTER" afterwards.*		It is possible to set the brightness level. Default is 50%.

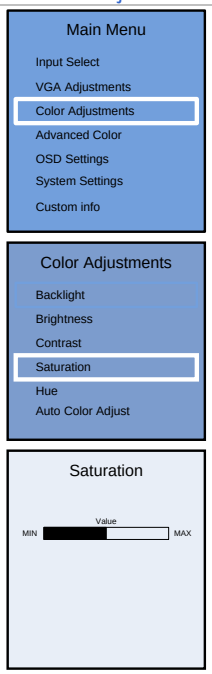
Color Adjustment – Contrast



It is possible to set the Contrast level.

Default is 50%.

Color Adjustment – Saturation



It is possible to set the color saturation level.

Default is 50%.

Color Adjustment – Hue

It is possible to set the Hue level.

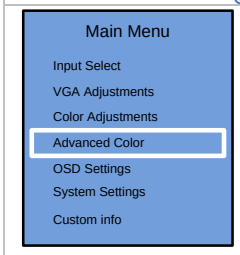
Default is 50%.

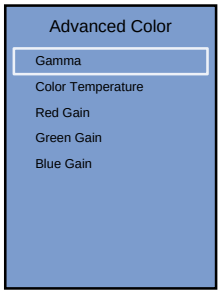
Color Adjustment – Auto Color Adjust

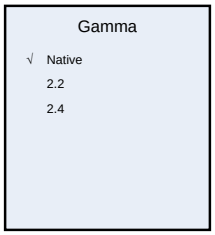
It is possible to set use the command Auto Color Adjust.

17.3 Advanced Color (not available in ECDIS mode)

Adv. Color Settings – Gamma



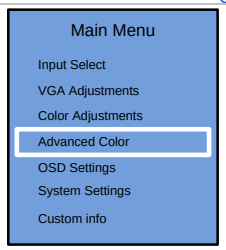


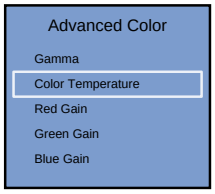


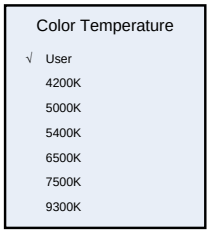
It is possible to set the Gamma

Default is Native.

Adv. Color Settings – Color Temp



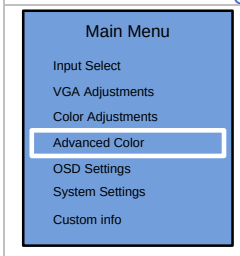


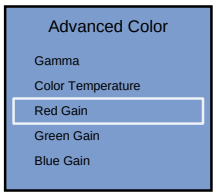


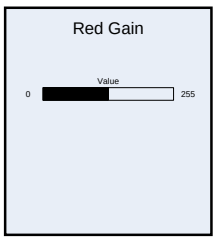
It is possible to set the Color Temperature.

Default is User.

Adv. Color Settings – Red/Green/Blue







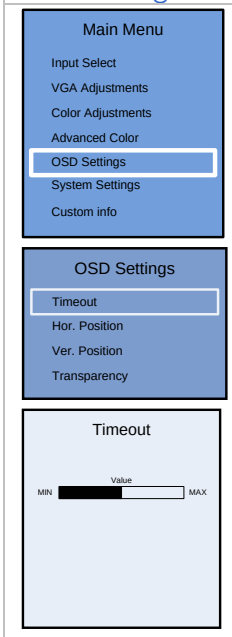
The rate for Red/Green/Blue can be set here from 0 – 255.

Default is 255/255/255

Note: These values are only adjustable when Color Temperature is set to 'User'

17.4 OSD settings

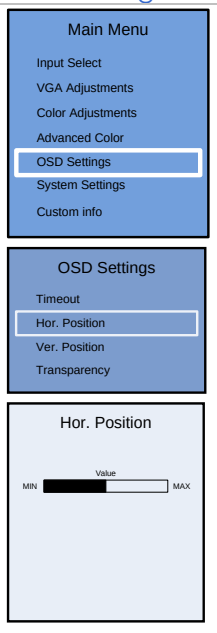
OSD Settings – Menu Timeout



The Menu Timeout period can be set between 0 and 60 seconds in steps of 5 seconds.

Default is 30 seconds

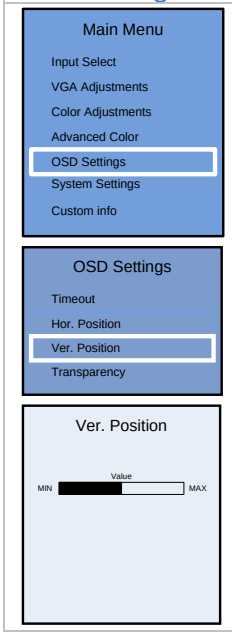
OSD Settings – Menu Hor. Pos.



The Horizontal Position of the OSD can be set from 0 (left margin) to 100 (right margin).

Default is 0 (left margin).

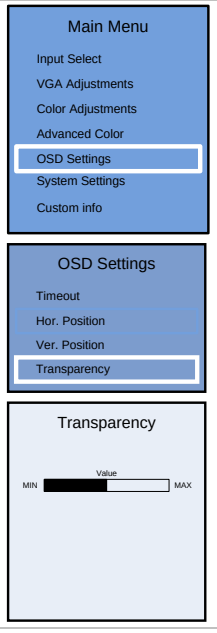
OSD Settings – Menu Vert. Pos.



The Vertical Position of the OSD can be set from 0 (upper margin) to 100 (bottom margin).

Default is 50 (center of the display)

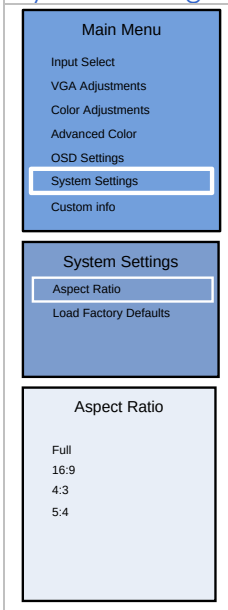
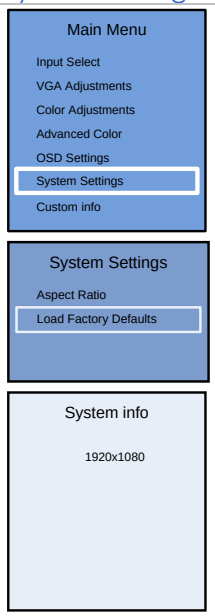
OSD Settings – Transparency



The transparency of both the OSD and the Popup can be selected from 0 (solid) to 15 (clear)

Default is 2

17.5 System settings

System Settings – Aspect Ratio		System Settings – Load Factory Defaults	
	Change Aspect Ratio. Default is Full.		Reset the monitor to factory settings.

18 Appendix B: Pixel policy

ISO 9241-307:2008 guidelines for LCD pixel defects

Introduction

TFT displays consist of a set number of pixels. Each pixel consists of 3 sub-pixels also called dots (one red, one blue and one green). Every sub-pixel is addressed by its own transistor. As a result, the manufacturing of glass substrate is very complex.
Due to the nature of this manufacturing process, occasional defects can occur. Pixel defects or failures cannot be fixed or repaired and may occur at any stage during the service life of the TFT display.
To regulate the acceptability of defects and protect the end user, ISIC A/S complies with the ISO 9241-307:2008 standard. This standard recommends how many defects are considered acceptable in a display, before it should be replaced within the terms of the warranty.

Monitor classification

ISO 9241-307:2008

Allowed defects per type per million pixels						
Defect classes	**Pixel defects**			**Cluster defect**		
	Type 1	**Type 2**	**Type 3 total** ($2xN_{3a} + N_{3b}$)	**Type 1**	**Type 2**	**Type 3**
Class: 0	0	0	0	0	0	0
Class: I	1	1	5	0	0	0
Class: II	2	2	10	0	0	1
Class: III	5	15	100	0	0	5

ISIC TFT monitors comply with ISO 9241-307:2008 Class II.
Special agreements about other classifications can be made between ISIC A/S and the customer.

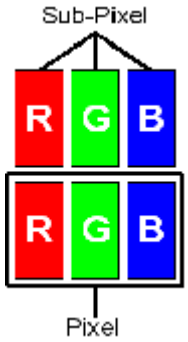
Measurement method/monitoring conditions for pixel defects

In compliance with the ISO-9241-307:2008 standard, the following conditions are observed:

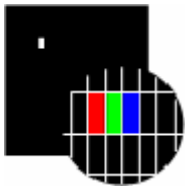
- Final check for pixel fault undertaken right after burn-in, i.e. with pre-heating of the display.
- Surrounding temperature 25°C ± 5°C
- Relative air humidity 40–70%

Pixel definition

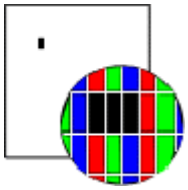
Every pixel consists of three sub-pixels/dots (red, blue, green).
Every sub-pixel has its own transistor.
The three sub-pixels/dots must be considered as one unit.



Pixel

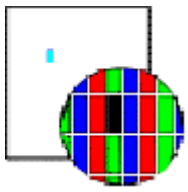


Pixel defect type 1 Pixel constantly lit



Pixel defect type 2 Pixel constantly dark

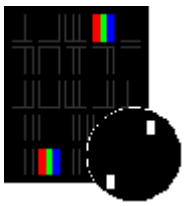
Pixel defect type 3a
Sub-pixel/dot (red, blue, green) constantly lit



Pixel defect type 3b
Sub-pixel/dot (red, blue, green) constantly dark

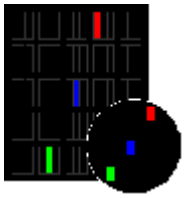
Cluster

A cluster consists of 5 x 5 pixels.

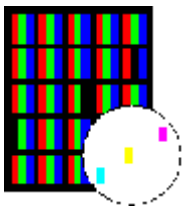


Cluster pixel defect type 1
Pixels in a cluster area constantly lit

Cluster pixel defect type 2
Pixels in a cluster area constantly dark



Cluster pixel defect type 3a
Sub-pixels/dots in a cluster area constantly lit



Cluster pixel defect type 3b
Sub-pixels/dots in a cluster area constantly dark

Pixel faults accepted by ISIC A/S

The maximum number of pixel faults that is considered acceptable at different screen resolutions is shown in the table below. This is the native resolution and not the resolution as adjusted by user.

Class II

Allowable number of pixel faults in monitor applications							
Screen type	**Native resolution**	**Number of pixels**	**Pixel defect type 1**	**Pixel defect type 2**	**Pixel defect Type 3 total** ($2xN_{3a} + N_{3b}$)	**Cluster defect type 1 and 2**	**Cluster defect type 3**
WVGA	**800x480**	**384,000**	**0**	**0**	**3**	**0**	**0**
XGA	**1024x768**	**768,432**	**1**	**1**	**7**	**0**	**0**
WXGA	**1280x800**	**1,024,000**	**2**	**2**	**10**	**0**	**1**
SXGA	**1280x1024**	**1,310,720**	**2**	**2**	**13**	**0**	**1**
UXGA	**1600x1200**	**1,920,000**	**3**	**3**	**19**	**0**	**1**
FHD	**1920x1080**	**2,073,600**	**4**	**4**	**20**	**0**	**2**
WUXGA	**1920x1200**	**2,304,000**	**4**	**4**	**23**	**0**	**2**

Edwin Rahrs Vej 54
DK-8220 Brabrand
Denmark
Web: http://www.isic-systems.com
Email: service@isic-systems.com