DuraMON 55 GLASS

User Reference Manual

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Image sticking: If the monitor is operated with static images (logo's etc.) it will inevitably lead to images sticking on the display. This is not a permanently situation and can be removed by operating the monitor with a video that is created for this purpose.

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

Classification

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

Approvals

Approval according to IACS E10 ed. 6 and IEC 60945 ed. 4, Maritime navigation and radio communication equipment and systems – General requirements.
ECDIS IEC 61174 ed. 4 compliant.
Radar IEC 62288 ed. 2 compliant.
Radar IEC 62388 ed. 2 compliant.

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
Fax: +45 70 20 79 76
Web: http://www.isic-systems.com

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1 Features

Congratulations on your purchase of a DuraMON 55 GLASS. This short form manual is designed to get you started working with your new DuraMON 55 GLASS.

The DuraMON 55 GLASS monitor is made as rugged monitors especially designed for the demanding operating conditions at sea.

The DuraMON 55 GLASS is 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 a good readability thus 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.

Direct dimming control (1cd to100%) from UP/DOWN buttons (except ECDIS models).
Full settings control via menu or serial link.
IP65 protected front.

Multiple connections to cover the widest range of signal sources:
Display Port x 2
HDMI x 2
DVI-D
VGA

Optional Touch Screen available, but has to be ordered with the monitor.

2 General considerations on Installation and Operation

The DuraMON GLASS is designed to work at conditions according to IEC 60945. However, keeping the temperature and vibration level at a minimum will extend the life time of the product. ISIC recommend operating this product at normal room temperature (20-25 °C), with the minimum of direct sunlight, vibration and humidity.

Operation of the DuraMON 55 GLASS

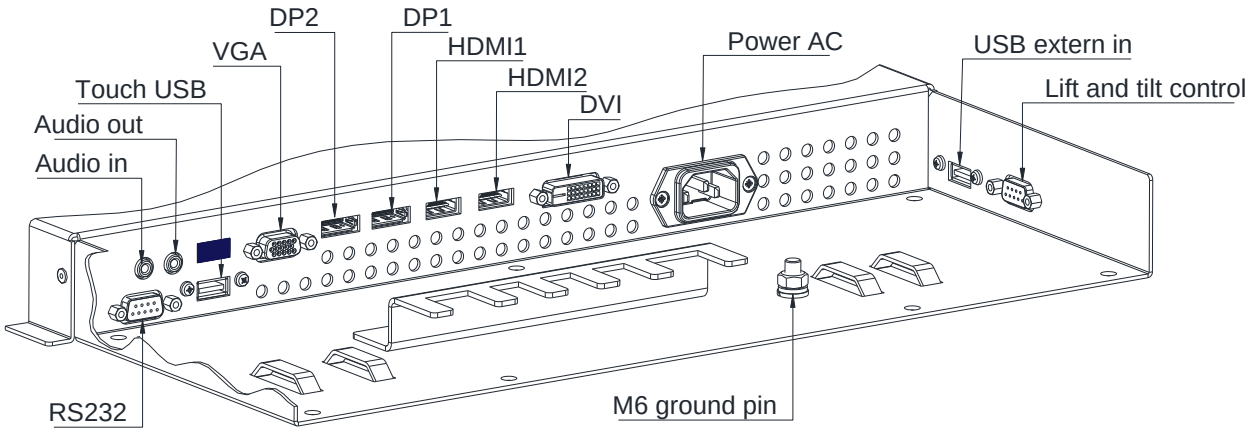
To ensure that colors and luminance on the display are correct in ECDIS applications, do not use the monitor until the warm-up period has completed.

The warm-up period is as follows:

	Day mode	Dusk mode	Night mode
DuraMON 55 GLASS	30 min	30 min	30 min

3 DuraMON 55 GLASS connections

Below is a view of optional connections to the monitor. The default inputs are: power, RS-232, DP / HDMI, DVI and VGA.



4 DuraMON 55 GLASS front panel controls (ECDIS and Radar)

The front panel is illuminated and will follow the brightness level of the monitor backlight.

4.1 DuraMON 55 GLASS front:

STATUS:
This LED will illuminate green when the monitor is powered on and red when the monitor is powered down. The LED will be red if no active signal is found.

ECDIS:
The LED will ONLY illuminate when the backlight level is at calibrated setting AND ONLY on an ECDIS calibrated port.

Touch On/Off:
This button will activate or disable the touch sensor, there will be a text "Touch" that will light when the touch is in-active. *Be aware that it might take some seconds from enabling the touch to computer detects it.*

ON/OFF:
This key is used to turn the product on or off. Pressing it will turn the power on, while holding it pressed down for 5 seconds will turn the power off. The status light will change from green to red to indicate it's powered down. It is important to notice that, when powered off, the product still consumes some power from the mains. To cut off the power from the product it is necessary to unplug its power cord from the mains.

Enter:
Use this to select the highlighted item in OSD menu.

UP/DOWN:
Used to adjust backlight or to navigate and adjust settings in menus. Pressing UP and DOWN together will restore the backlight level to the last selected ECDIS mode by the serial link. (See document 04924-001 for protocol details).

Menu:
To activate the OSD menu, press "Menu".
See Popup Menu section for details.

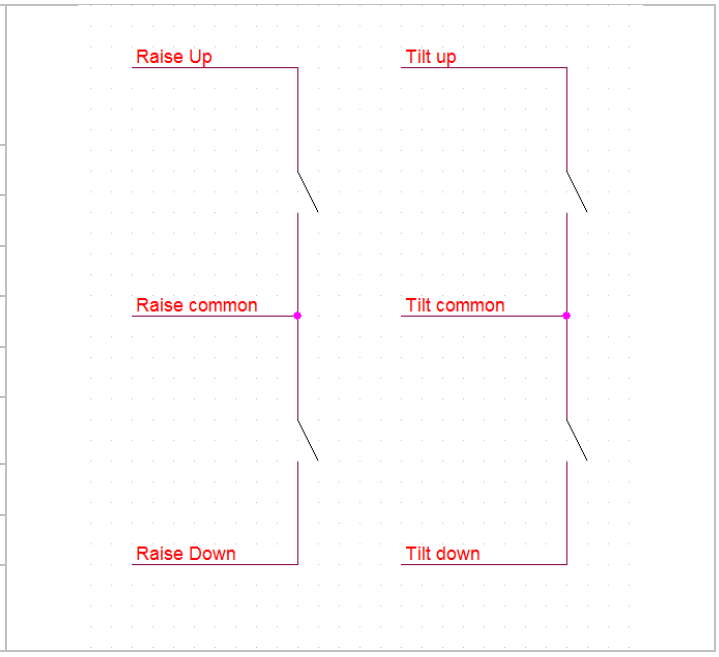
5 Serial connection pin-out

Pin	RS-232 SUB-D 9-pol female
1	
2	RX
3	TX
4	
5	GND
6	
7	
8	
9	

Mating connector 9 pin D-Sub male.

6 Floor stand Up/Down/Tilt connection pin-out

Pin	Function SUB-D 9-pol male
1	**Tilt Down**
2	**Raise Down**
3	**Raise Up**
4	**Tilt Up**
5	**Gnd**
6	**Raise Common**
7	**Tilt Common**
8	**NC**
9	**NC**



Mating connector 9 pin D-Sub female.

7 Technical specifications DuraMON 55 GLASS

DuraMON GLASS I/O

Video inputs:	**1 x VGA: Up to 1920 x 1080 @ 60Hz** **1 x DVI: Up to 1920 x 1080 @ 60Hz** **2 x Display Port 1.2a: Up to 3840 x 2160 @ 60Hz** **2 x HDMI 1.4: Up to 3840 x 2160 @ 30Hz** **Recommended resolution is 3840 x 2160** Generally all VESA compatible video modes are supported. **External USB**
Control inputs:	**1x RS-232 – for remote control.** **1x USB for touch sensor (optional).** **1 x Raise up/down & tilt**

DuraMON GLASS Power Supply Options

Standard:	**90-260Vac 50-60Hz Input**

DuraMON GLASS Environmental Conditions

Operating Temperature:	**-15 to 55 °C**
Storage Temperature:	**-25 to 70 °C**
Relative Humidity:	**8 to 90 %**

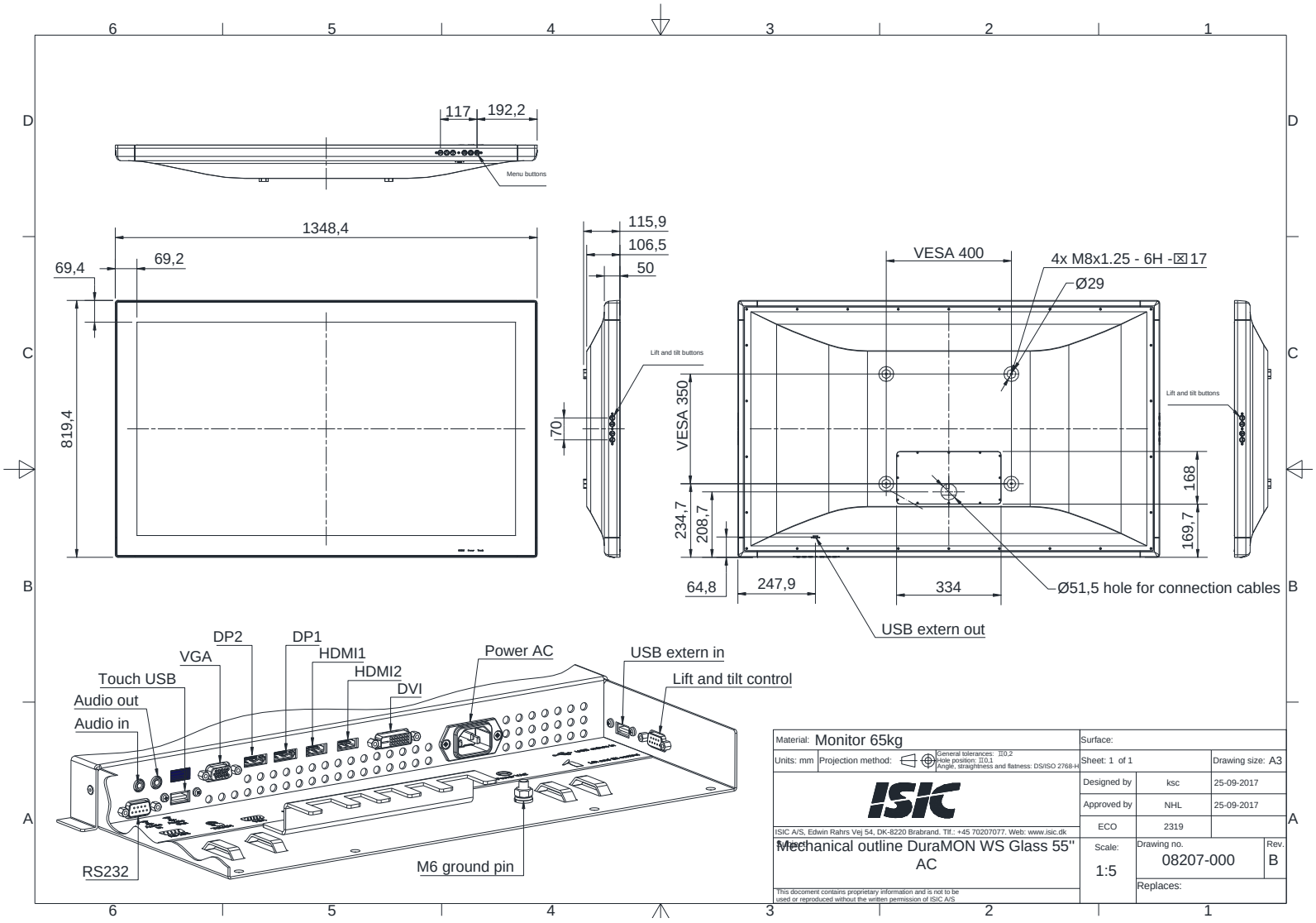
DuraMON GLASS Approvals

Marine:	**IEC 60945 Ed. 4, 2002-08 & IACS E10 Rev. 6 Oct. 2014**
ECDIS, Radar:	**IEC 61174 ed. 4, IEC 62288 ed. 2, IEC 62388 ed. 2**
Type Approvals:	For marine class approvals – see www.isic-systems.com

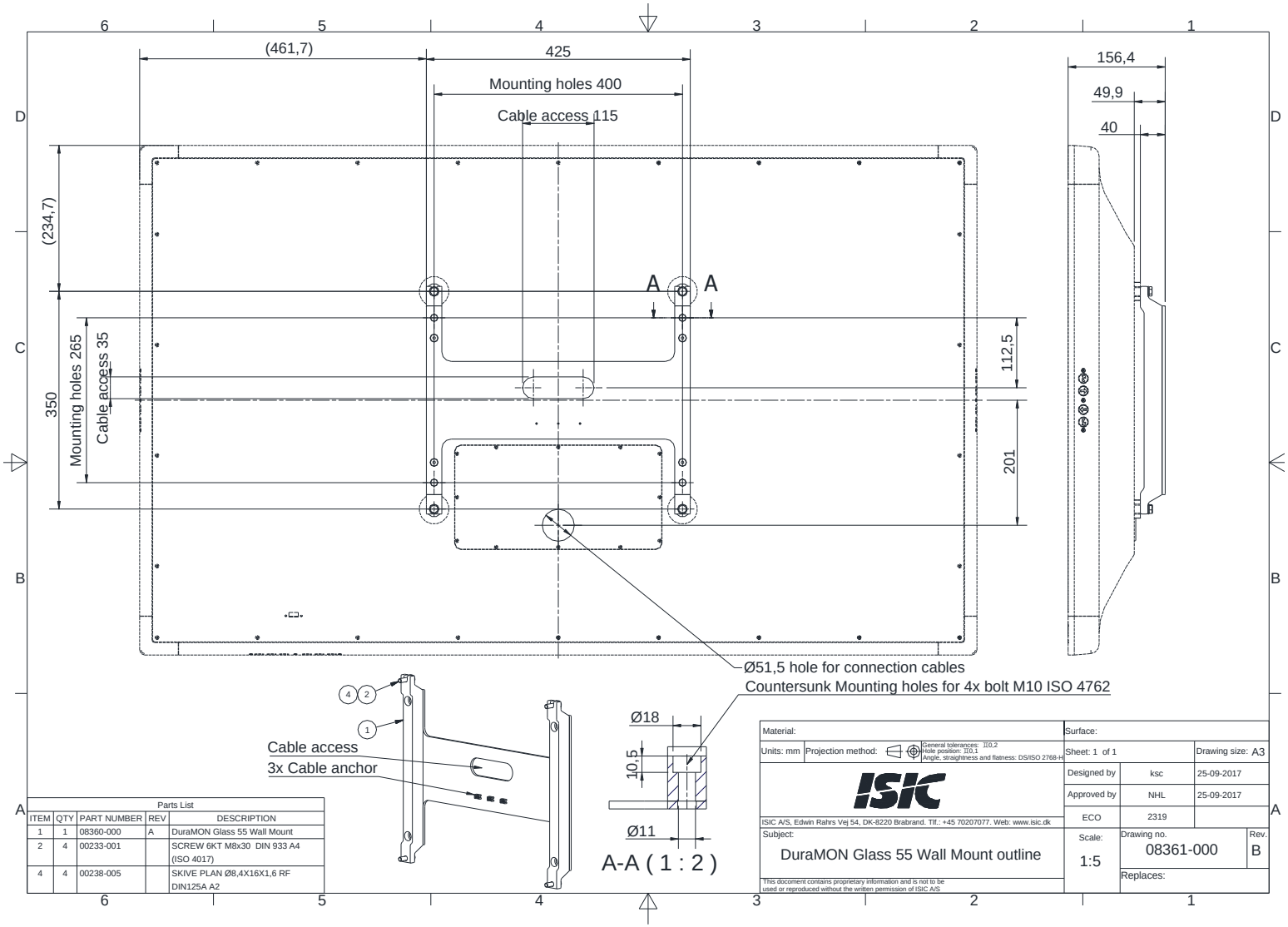
DuraMON55 specification

Resolution:	**3840 x 2160**
Active Area	**1209.6mm x 680.4mm (55" diagonal)**
Pixel Pitch:	**0.315 mm x 0.315 mm**
View angle:	**89° (L/R/T/B) (typical)**
Viewing distance:	**1.10 m**
Luminance:	**450 cd/m2 (typical)**
Contrast ratio:	**4000:1 (typical)**
Colors:	**16.7 mill. (24-bit)**
Response Time:	**6.5 ms (GtG) (typical)**
Protection:	**IP65 front – IP20 rear**
Weight:	**75 kg**
Dimensions (WxHxD):	**1348,5 cm x 819,4 x 95 cm**

8 Mechanical outline DuraMON 55 GLASS



9 Mechanical outline Wall Mount



Parts List				
ITEM	QTY	PART NUMBER	REV	DESCRIPTION
1	1	08360-000	A	DuraMON Glass 55 Wall Mount
2	4	00233-001		SCREW 6KT M8x30 DIN 933 A4 (ISO 4017)
4	4	00238-005		SKIVE PLAN Ø8,4X16X1,6 RF DIN125A A2

Material:		Surface:	
Units: mm	Projection method:	Sheet: 1 of 1	Drawing size: A3
		Designed by: ksc	25-09-2017
		Approved by: NHL	25-09-2017
		ECO: 2319	
ISIC A/S, Edwin Rahrs Vej 54, DK-8220 Brabrand. Tlf.: +45 70207077. Web: www.isic.dk			
Subject: DuraMON Glass 55 Wall Mount outline		Scale: 1:5	Drawing no. 08361-000 Rev. B
This document contains proprietary information and is not to be used or reproduced without the written permission of ISIC A/S			Replaces:

10 ECDIS mode

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

To setup ECDIS on the system a color map must be downloaded from the monitor to the ECDIS application. Please see the Dura Serial Communication protocol for details.

11 Dura Serial Communication protocol

See document 04924-001 for protocol details.

The type of the product can be queried by sending the 'TYP' command, ref. the Serial Protocol Document

Monitor	Response from monitor
DuraMON 55 GLASS	DuraMON 55 GLASS

12 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 55 GLASS	560 cm	360 cm

13 Power Consumption

Test object / condition	**Ptyp [W]**	**Pmax [W]**
DuraMON 55 GLASS	125	200

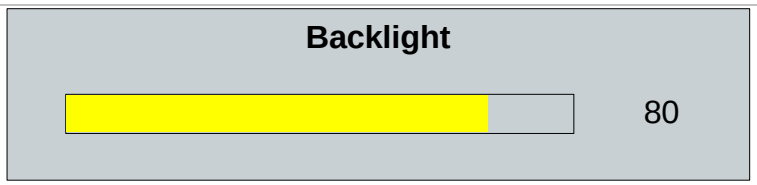
14 Inrush current

Test object / condition	100 [VAC]	240 [VAC]
DuraMON 55 GLASS	45	108

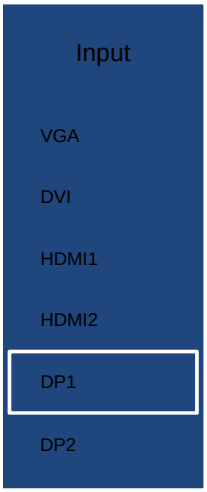
Check OSD menu

1 Popup Menu

Without entering the OSD menu it is possible to adjust brightness by pressing “up” or “down” key.

Press “up” or “down”		It is now possible to adjust the backlight level by pressing either up- or down key.

Without entering the OSD menu it is possible to select which input is active by pressing “Enter”.

Press “Enter” to activate this menu.		Use “up” or “down” key and then press enter to select another input channel.

2 Advanced OSD

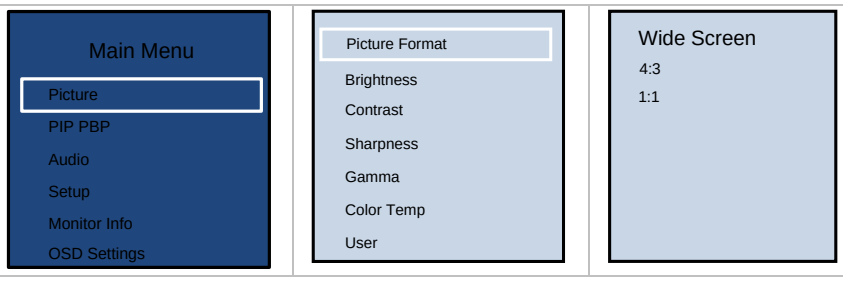
With the Advanced OSD (On Screen Display) you can modify the settings and control the special features of the DuraMON as described on the next pages.

To enter the Advanced OSD, press “MENU” button.

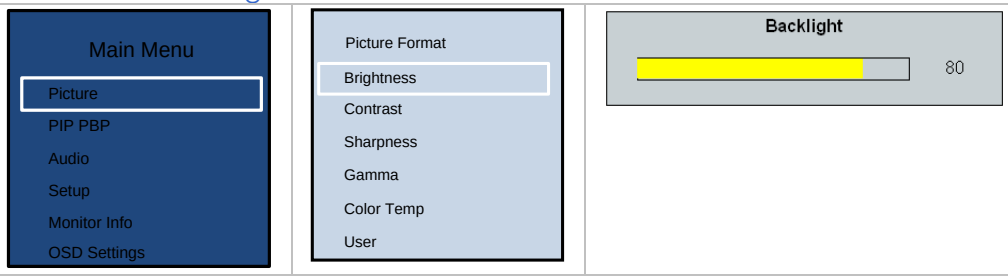
To navigate the Advanced OSD use the “UP” and “DOWN” buttons and press “ENTER” to select a specific setting. To get back to the previous menu point, press the “MENU” button.

2.1 Picture

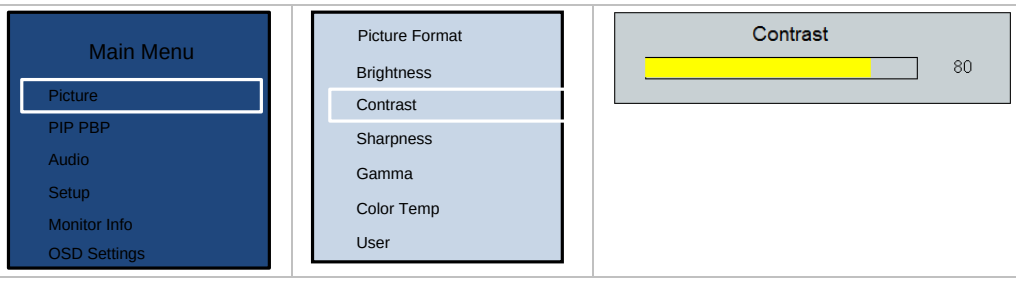
Picture – Picture format



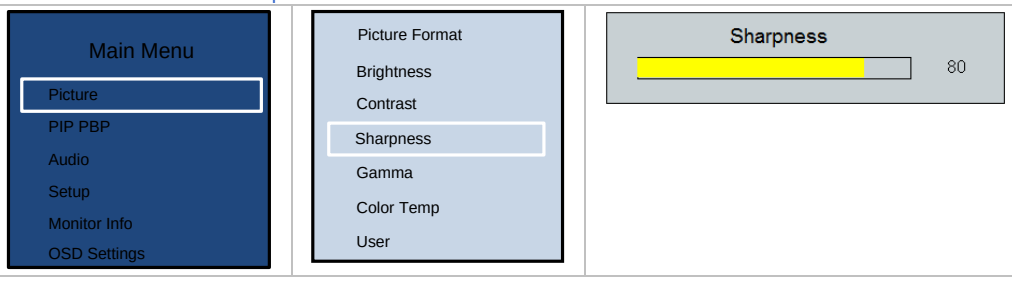
Picture – Picture Brightness



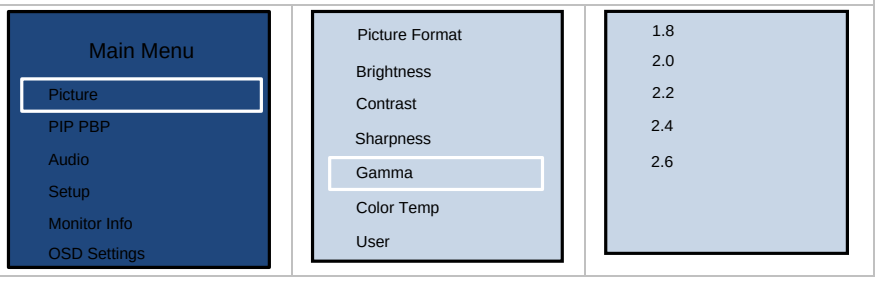
Picture – Picture Contrast



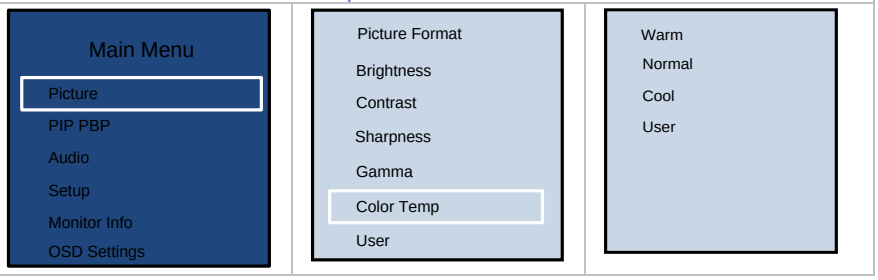
Picture – Picture Sharpness



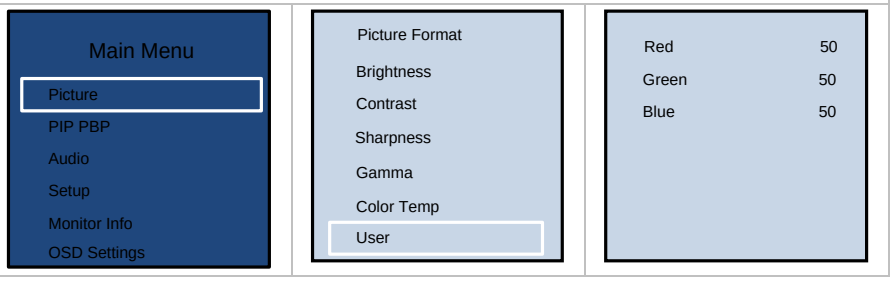
Picture – Picture Gamma



Picture – Picture Color Temp

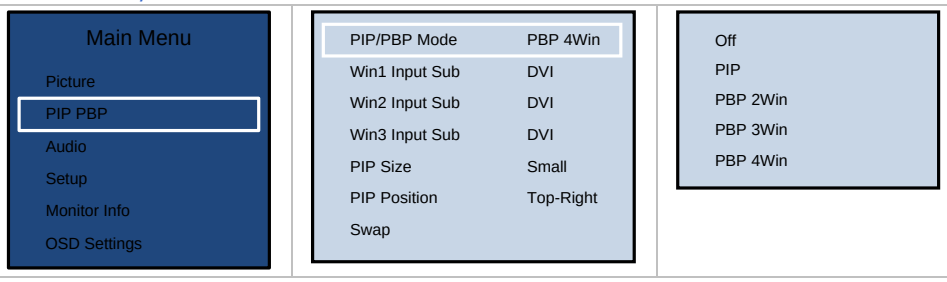


Picture – Picture User

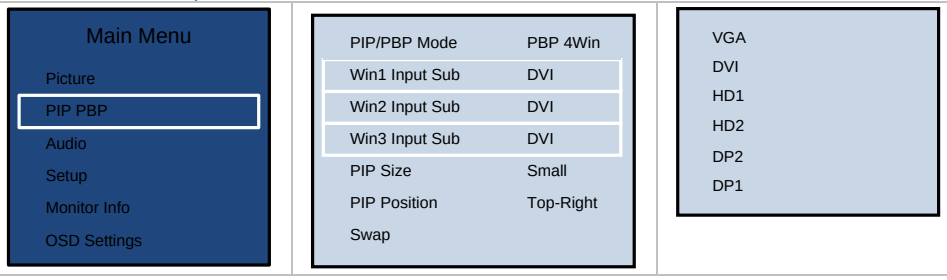


2.2 Picture in Picture

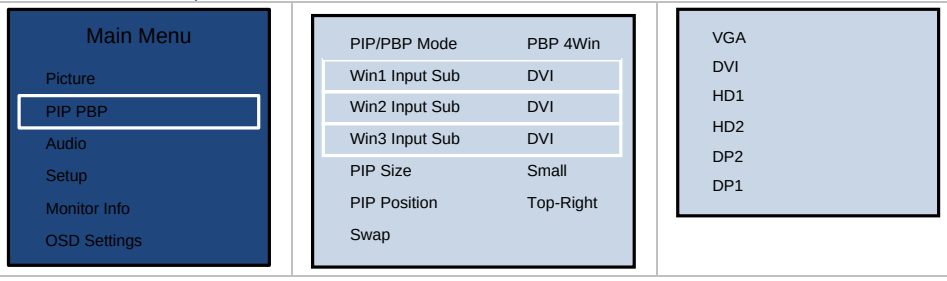
PIP PBP PIP/PBP Mode



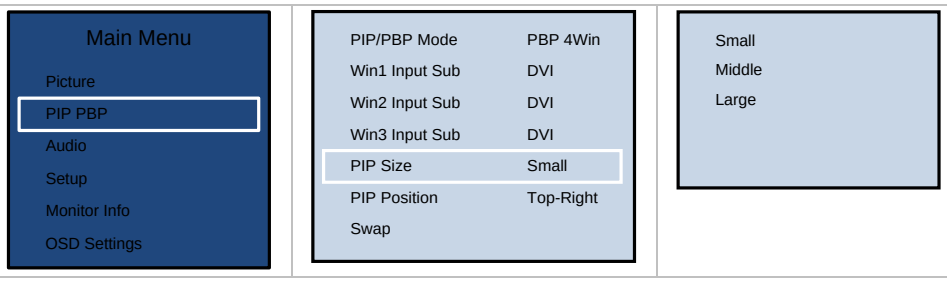
PIP PBP Win1 Input Sub



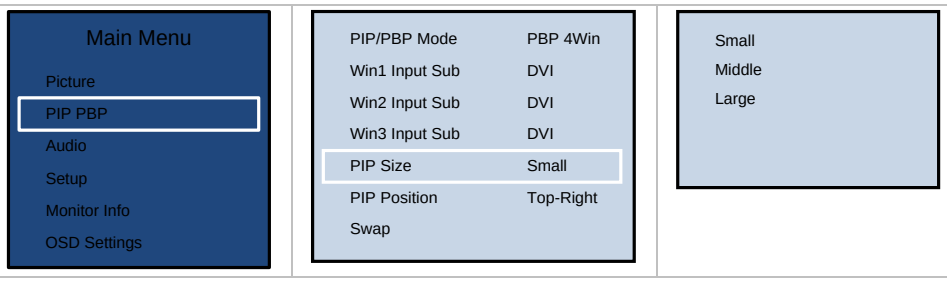
PIP PBP Win1 Input Sub



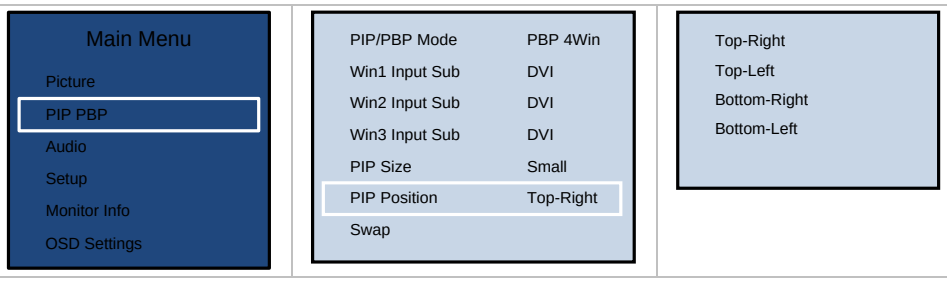
PIP PBP PIP Size



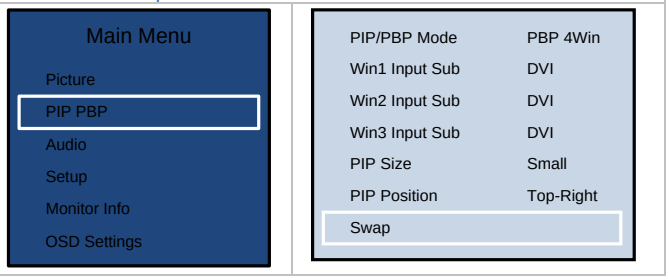
PIP PBP PIP Size



PIP PBP PIP Position

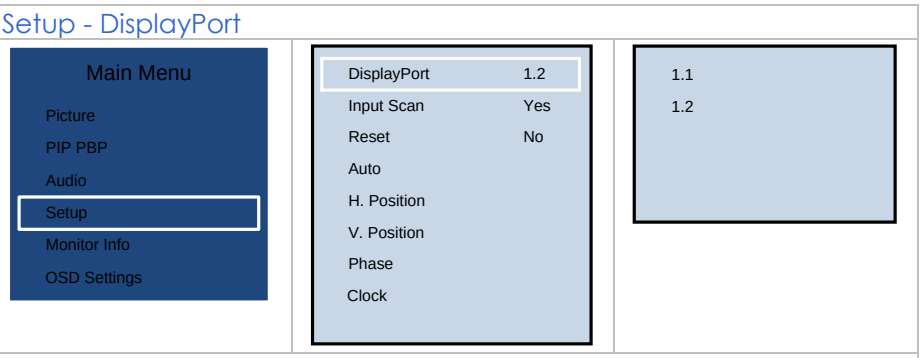


PIP PBP Swap

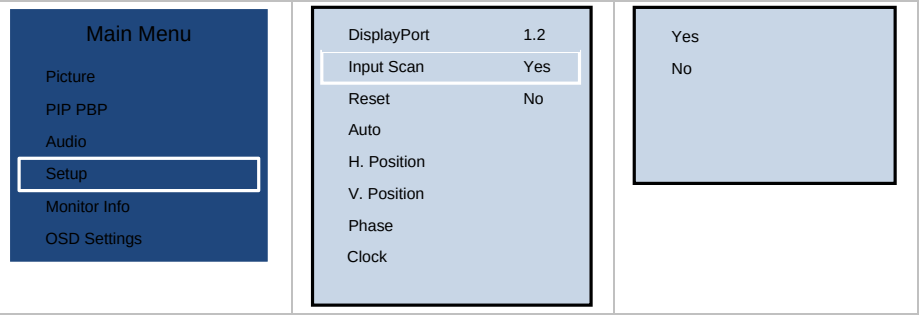


2.3 Setup

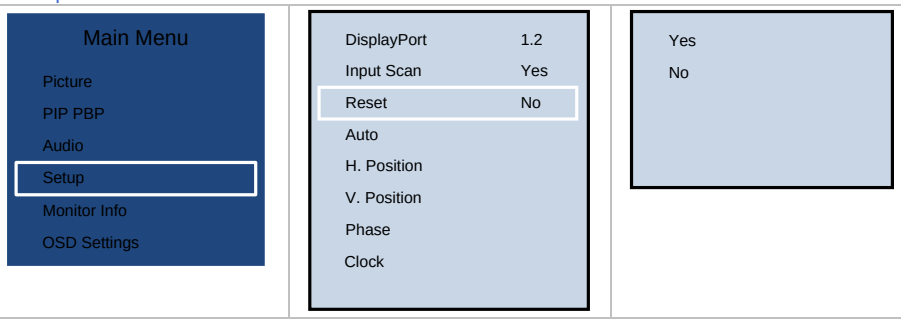
Setup - DisplayPort



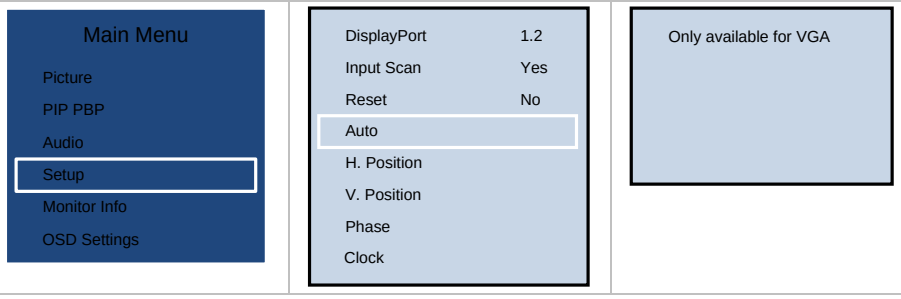
Setup – Input Scan



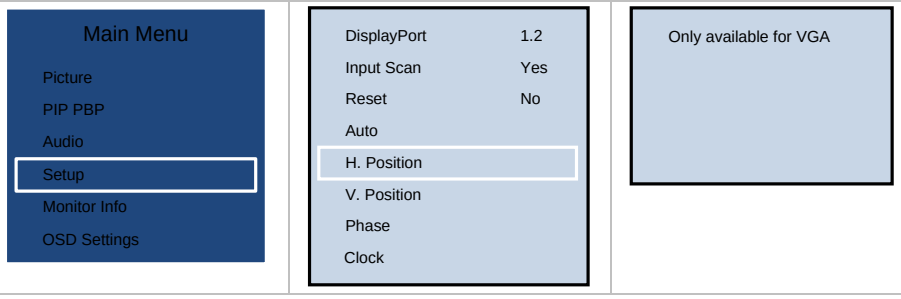
Setup – Reset



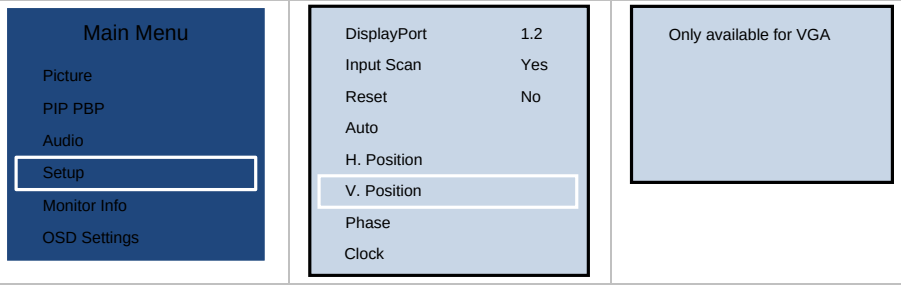
Setup – Auto



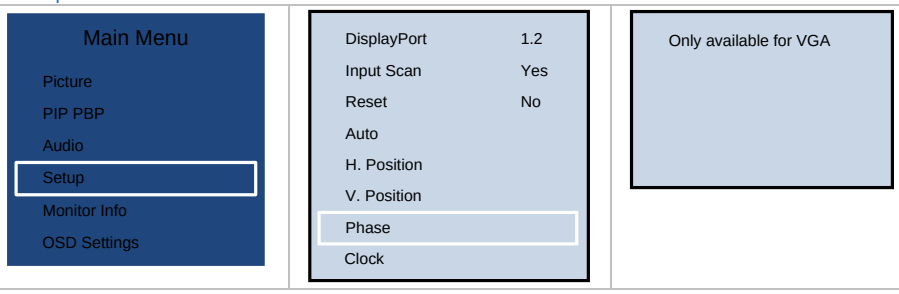
Setup – H. Position



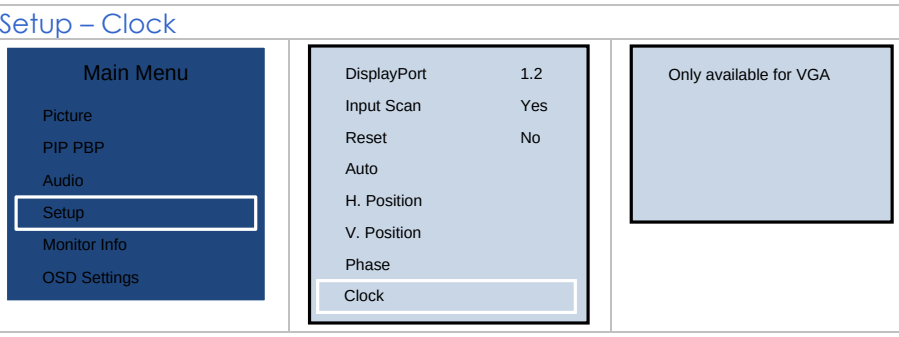
Setup – V. Position t



Setup – Phase

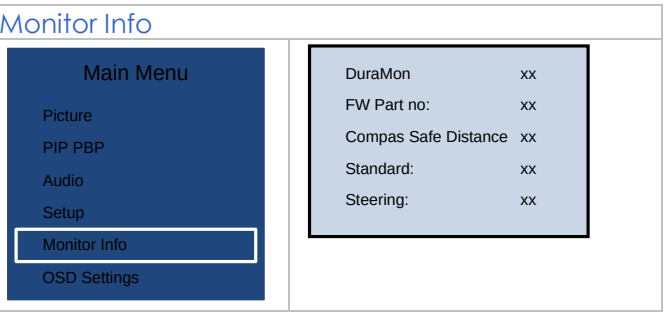


Setup – Clock



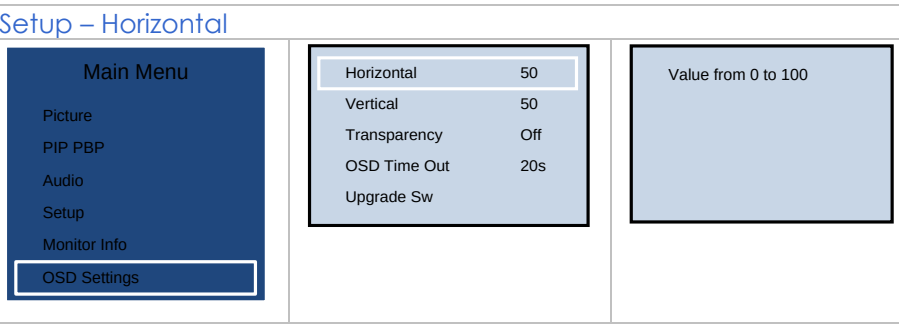
2.4 Monitor Info

Monitor Info

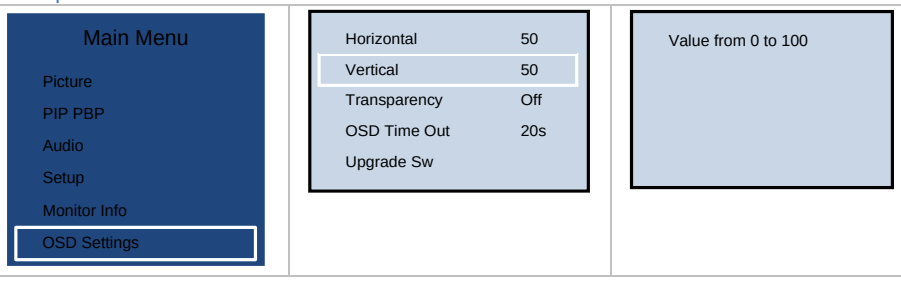


2.5 OSD Settings

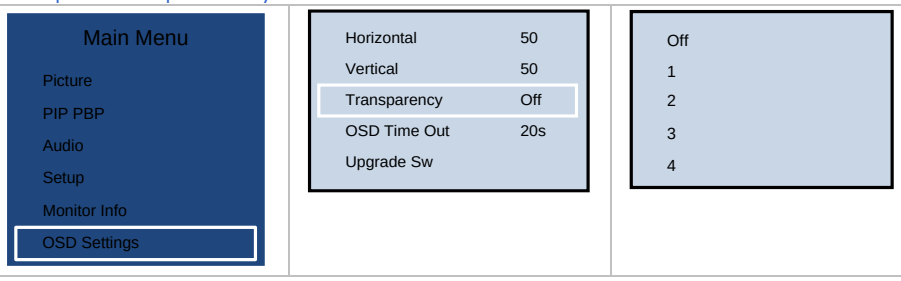
Setup – Horizontal



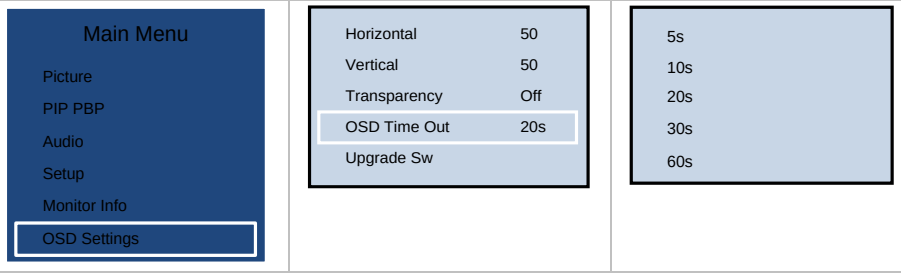
Setup – Vertical



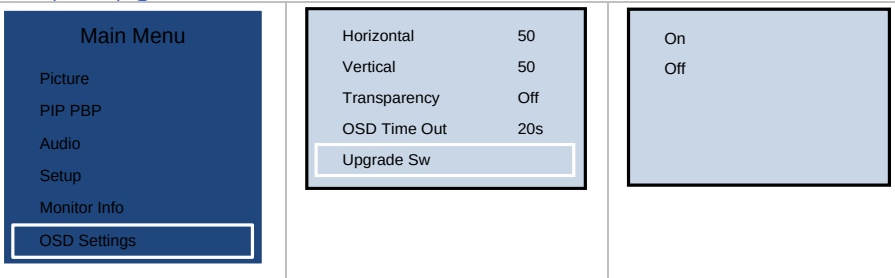
Setup – Transparency



Setup – OSD Time Out



Setup – Upgrade SW



3 Troubleshooting

Problem	Cause	Solutions
No picture on display	Backlight level set to minimum	Increase backlight
	Monitor turned off	Turn on the monitor
	No input signal present	Apply signal
	No power cord connected	Apply power
Buttons on front doesn't work	Unit in ECDIS mode	Press Menu + Enter to unlock the monitor
	Keypad defect	Please do not try to open the unit. Send it to ISIC A/S for repair.
The unit will not turn on.	Unknown	Please do not try to open the unit. Send it to ISIC A/S for repair.

4 Servicing the unit

In case that 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 has to be recalibrated at ISIC.

5 Terms, Acronyms and abbreviations

Communication protocol:	Use a serial link to control various settings in the monitor
DVI-D:	Digital Visual Interface
ECDIS:	Electronic Chart Display and Information System
IP65:	International Protection Rating (dust tight and protected against water jets)
OSD:	On Screen Display
VGA:	Video Graphics Array
DP:	Display Port
HDMI:	High-Definition Multimedia Interface

6 ISIC info / Support

In case you have inquiries or problems with your DuraMON GLASS, 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: Fax:	+45 70 20 70 77 +45 70 20 79 76
Mail: www:	isic@isic-systems.com 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: IBAN DKK: IBAN EUR: IBAN USD: SWIFT:	0892 DK53 0892 0001 0159 69 DK48 0892 0003 0026 19 DK26 0892 0003 0026 27 HANDDKKK
Contacts: RFQ's:	 By fax to +45 70 20 79 76 By mail to sales@isic-systems.com
Orders:	By fax to +45 70 20 79 76 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 - 1600) at +45 70 20 70 77
Service:	Before shipment for service Request Return Material Authorization number at homepage http://www.isic-systems.com/aftersales/tech-support-rma/ By mail to service@isic-systems.com

7 Revision history

Rev A	July 2017	First release
Rev B	September	**Page 6**, Corrected button drawing **Page 9**, Mechanical outline updated **Page 10**, Mechanical outline updated

8 Appendix A: 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.

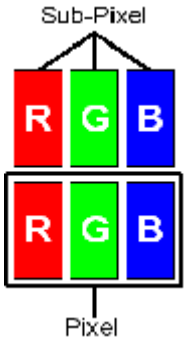
Measurement method/monitoring conditions for pixel defects

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

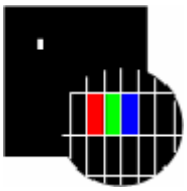
- Final check for pixel fault undertaken right after burn-in, i.e. with pre-heating of the display.
- Surrounding temperature 25ºC ± 5ºC
- Relative air humidity 40–70%

Pixel definition

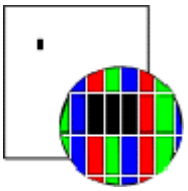
Every pixel consists of three sub-pixels/dots (red, blue, green).
Every sub-pixel has its own transistor.
The three sub-pixels/dots must be considered as one unit.



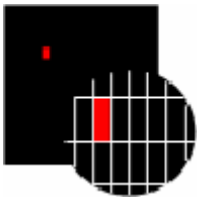
Pixel



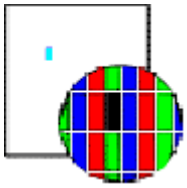
Pixel defect type 1 Pixel constantly lit



Pixel defect type 2 Pixel constantly dark



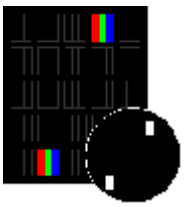
Pixel defect type 3a
Sub-pixel/dot (red, blue, green) constantly lit



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**
UHD	**3840x2160**	**8,294,400**	**16**	**16**	**83**	**0**	**8**

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