

DuraMON GLASS series

DuraMON 19 GLASS

DuraMON 24 GLASS

DuraMON 26 GLASS

DuraMON 27 GLASS

DuraMON 32 GLASS

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. 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

Radar IEC 62288 ed. 2

Radar IEC 62388 ed. 2



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.

Copyright 2017 ISIC A/S

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>



Table of Contents

1	FEATURES	5
2	GENERAL CONSIDERATIONS ON INSTALLATION AND OPERATION	6
3	DURAMON GLASS CONNECTIONS	7
3.1	DURAMON 19 GLASS:	7
3.2	DURAMON 24 GLASS / DURAMON 26 GLASS:.....	7
3.3	DURAMON 27 / 32 GLASS:	8
4	DURAMON GLASS FRONT PANEL CONTROLS (ECDIS AND RADAR)	9
4.1	DURAMON GLASS FRONT:.....	9
5	SERIAL CONNECTION PIN-OUT	11
6	TECHNICAL SPECIFICATIONS DURAMON GLASS	12
6.1	SPECIFICATION DURAMON 19 GLASS.....	12
6.2	SPECIFICATION DURAMON 24 GLASS.....	13
6.3	SPECIFICATION DURAMON 26 GLASS.....	13
6.4	SPECIFICATION DURAMON 27 GLASS.....	13
6.1	SPECIFICATION DURAMON 32 GLASS.....	14
6.2	MECHANICAL OUTLINE DURAMON 19 GLASS	15
6.3	MECHANICAL OUTLINE DURAMON 24 GLASS	16
6.4	MECHANICAL OUTLINE DURAMON 26 GLASS	17
6.5	MECHANICAL OUTLINE DURAMON 27 GLASS	18
6.6	MECHANICAL OUTLINE DURAMON 32 GLASS	19
7	MOUNTING OF DURAMON GLASS IN CONSOLE	20
8	ECDIS MODE	22
9	DURA SERIAL COMMUNICATION PROTOCOL	22
10	BUZZER	22
11	TOUCH DRIVER	22
12	COMPASS SAFE DISTANCE	23
13	POWER CONSUMPTION	23
14	INRUSH CURRENT	23
15	OSD MENU	24
15.1	POPUP MENU	24
15.2	ADVANCED OSD	24
15.3	INPUT SELECT	24
15.4	VGA ADJUSTMENTS.....	25
15.5	COLOR ADJUSTMENTS (NOT AVAILABLE IN ECDIS MODE)	26
15.6	ADVANCED COLOR (NOT AVAILABLE IN ECDIS MODE)	28
15.7	OSD SETTINGS	29
15.8	SYSTEM SETTINGS	30
16	TROUBLESHOOTING	31
17	SERVICING THE UNIT	32
18	TERMS, ACRONYMS AND ABBREVIATIONS	32
19	ISIC INFO / SUPPORT	33



20 REVISION HISTORY 34
21 APPENDIX A: PIXEL POLICY 35



1 Features

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

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

The DuraMON GLASS 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 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 to 100%) from UP/DOWN buttons.

Full settings control via menu or serial link.

Support for DDC

Anti-Reflective coated glass.

IP65 protected front.

Multiple connections to cover the widest range of signal sources:

Display Port / HDMI

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 lowest level of vibration and humidity.

Installation of the DuraMON GLASS

In order to obtain the best possible operating conditions, please note the following precautions.

- Room for cooling.
When designing the cabinet/console for the DuraMON GLASS, please ensure that air can flow freely around the cabinet, in order to avoid any unnecessary rise in temperature. If it is not possible to have an adequate natural airflow, use a fan to force the airflow to be higher.
- Mounting positions
To obtain adequate cooling by convection ISIC recommends that the DuraMON GLASS is mounted at least 30 degrees from horizontal. If this is not possible, forced cooling must be applied directly to the unit in order not to overheat it.
- 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.

Operation of the DuraMON 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:

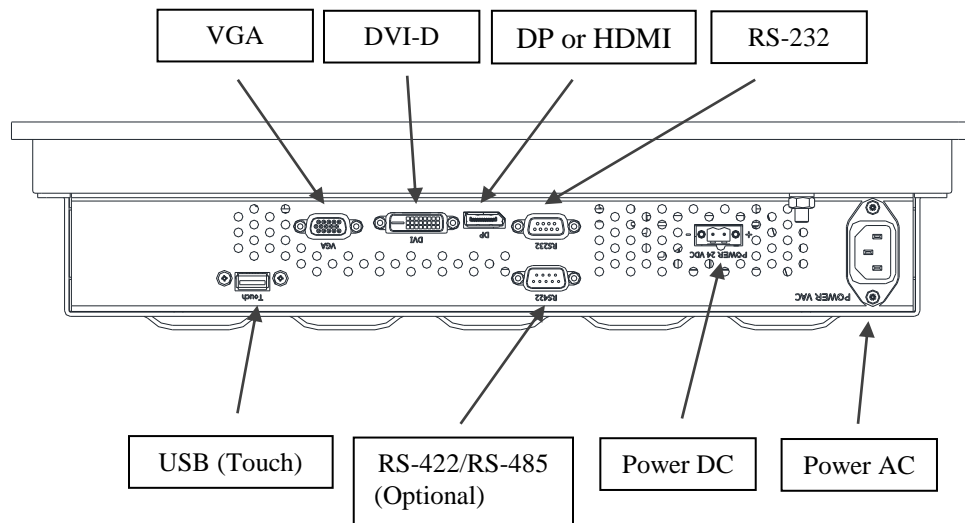
	Day mode	Dusk mode	Night mode
DuraMON 19 GLASS	30 min	30 min	30 min
DuraMON 24 GLASS	30 min	30 min	30 min
DuraMON 26 GLASS	30 min	30 min	30 min
DuraMON 27 GLASS	30 min	30 min	30 min
DuraMON 32 GLASS	30 min	30 min	30 min



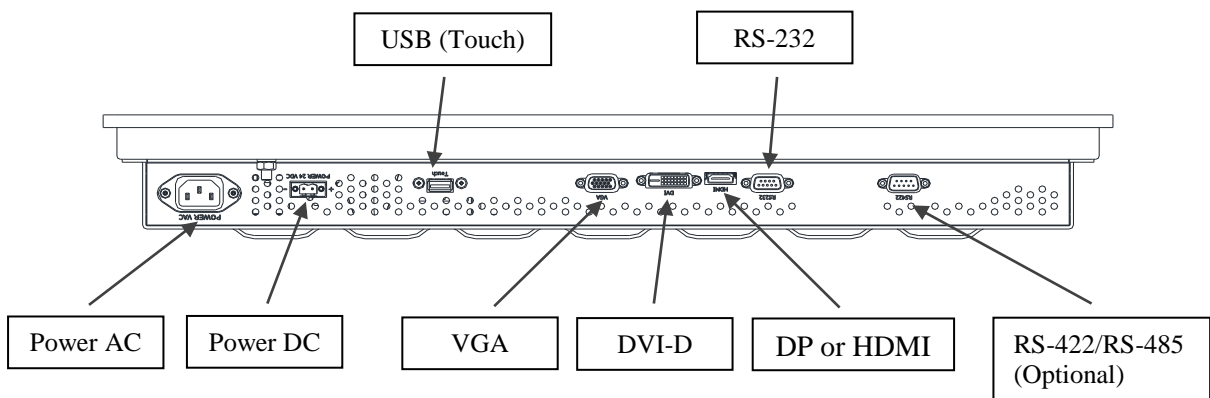
3 DuraMON GLASS connections

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

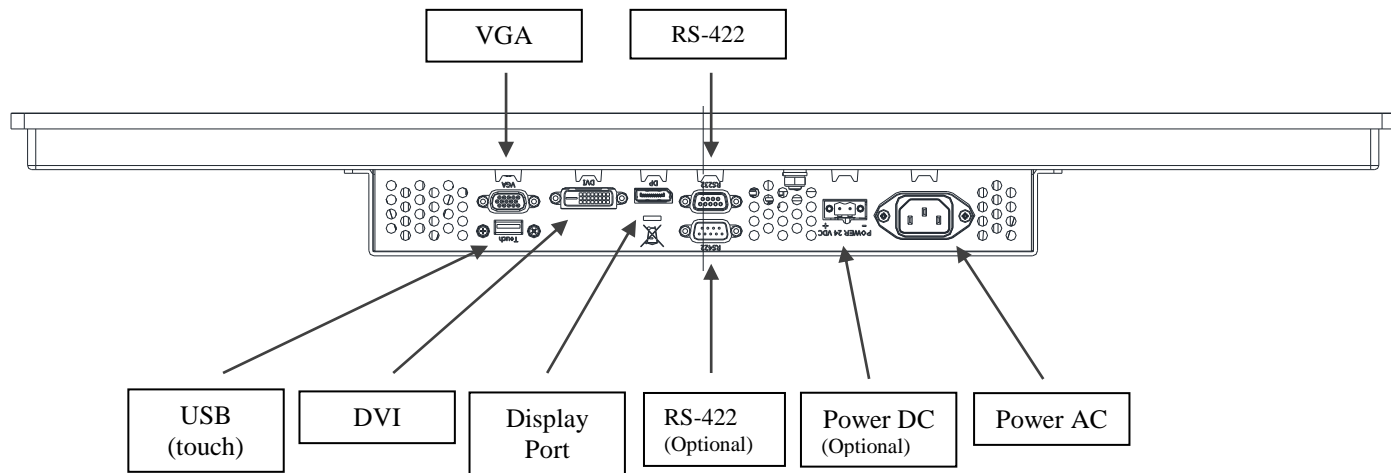
3.1 DuraMON 19 GLASS:



3.2 DuraMON 24 GLASS / DuraMON 26 GLASS:



3.3 DuraMON 27 / 32 GLASS:



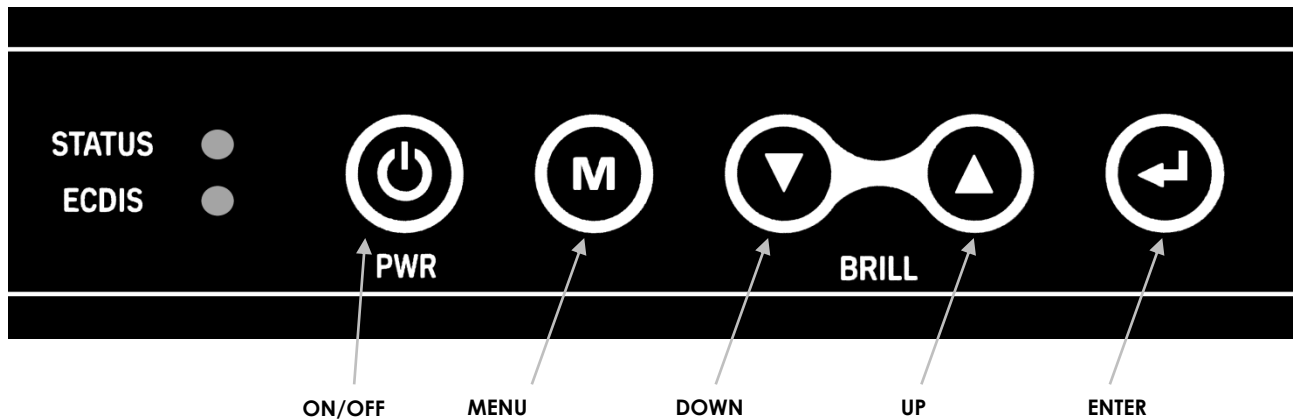
To connect the DC power connector you need a screw driver.
Only use multicore cables from AWG16 to AWG12 (1.0 mm² to 4 mm²).
DC connector: Weidmüller, BLZP 5.08HC/02/180F SN BK BX, 1944330000
AC Connector: IEC 60320 type C13



4 DuraMON 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 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 orange when the backlight level is at calibrated setting AND ONLY on an ECDIS calibrated port.

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.

If there is no active signal, the monitor will go to suspend mode until an active signal is detected. While the monitor is in suspend mode, the status light will blink.

Menu:

To activate the OSD menu, press "Menu" and "Enter" buttons at the same time. See Popup Menu section for details.

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).



ENTER:

This key is used to confirm and to enter the advanced OSD by pressing ENTER and thereafter MENU while holding ENTER pressed.



5 Serial connection pin-out

Pin	RS-232	RS-422/RS-485 (4 wire) (Optional)	RS-485 (2 wire) (Optional)
	SUB-D 9-pol female	SUB-D 9-pol male	SUB-D 9-pol male
1			
2	TX	B (RX-)	B (D-)
3	RX	Y (TX+)	
4			
5	GND	GND	GND
6			
7		A (RX+)	A (D+)
8		Z (TX-)	
9			



6 Technical specifications DuraMON GLASS

DuraMON GLASS I/O

Video inputs:	<p>1 x VGA 1 x DVI-D 1 x Display Port 1.2 / HDMI 1.4a</p> <p>Recommended resolution for: 19" is 1280x1024 (5/4) 24", 27" and 32" is 1920x1080 (16/9) 26" is 1920x1200 (max refresh rate is 60 Hz @ 1920x1200)</p> <p>Generally all VESA compatible video modes are supported. Special modes supported on request.</p>
Control inputs:	<p>1 x RS-232 – for remote control. 1 x RS-422/RS-485 – for remote control / daisy-chain (optional). 1 x USB for touch sensor (optional). 1 x Buzzer, (75-85 dB(A) / 1m) (activated by serial command)</p>

DuraMON GLASS Power Supply Options

Standard:	90-264Vac 50-60Hz Input
Optional:	18-31VDC Input (available with both AC and DC simultaneously)

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

6.1 Specification DuraMON 19 GLASS

Resolution:	1280 x 1024
Active Area	376.320mm x 301.056mm (19.0" diagonal)
Pixel Pitch:	0,294 mm x 0.294 mm
View angle:	89° (L/R/T/B) (typical)
Viewing distance:	1,02 m
Luminance:	300 cd/m ² (typical)
Contrast ratio:	2000:1 (typical)
Colors:	16,7 mill. (24-bit)
Response Time:	20 ms (GtG) (typical)
Window:	Anti-Reflective coated front glass
Protection:	IP65 front – IP20 rear
Weight:	8,5 kg
Dimensions (WxHxD):	429 mm x 382 mm x 92,8 mm



6.2 Specification DuraMON 24 GLASS

Resolution:	1920 x 1080
Active Area	521,28 mm x 293,22 mm (23.6" diagonal)
Pixel Pitch:	0,2715 mm x 0,2715 mm
View angle:	89° (L/R/T/B) (typical)
Viewing distance:	1,02 m
Luminance:	250 cd/m ² (typical)
Contrast ratio:	3000:1 (typical)
Colors:	16.7 mill. (24-bit)
Response Time:	25 ms (GtG) (typical)
Window:	Anti-Reflective coated front glass
Protection:	IP65 front – IP20 rear
Weight:	11 kg
Dimensions (WxHxD):	593 mm x 384,1 mm x 76 mm

6.3 Specification DuraMON 26 GLASS

Resolution:	1920 x 1200
Active Area	550.08mm x 343.8mm (25.54" diagonal)
Pixel Pitch:	0,2865 mm x 0,2865 mm
View angle:	89° (L/R/T/B) (typical)
Viewing distance:	1,02 m
Luminance:	350 cd/m ² (typical)
Contrast ratio:	1500:1 (typical)
Colors:	16.7 mill. (24-bit)
Response Time:	20 ms (GtG) (typical)
Window:	Anti-Reflective coated front glass
Protection:	IP65 front – IP20 rear
Weight:	14,5 kg
Dimensions (WxHxD):	621 mm x 435 mm x 96,8 mm

6.4 Specification DuraMON 27 GLASS

Resolution:	1920 x 1080
Active Area	597.89mm x 336.31mm (27" diagonal)
Pixel Pitch:	0,3114 mm x 0,3114 mm
View angle:	89° (L/R/T/B) (typical)
Viewing distance:	1,08 m
Luminance:	300 cd/m ² (typical)
Contrast ratio:	1000:1 (typical)
Colors:	16.7 mill. (24-bit)
Response Time:	14 ms (GtG) (typical)
Window:	Anti-Reflective coated front glass
Protection:	IP65 front – IP20 rear
Weight:	14 kg
Dimensions (WxHxD):	679 mm x 432,1 mm x 70 mm

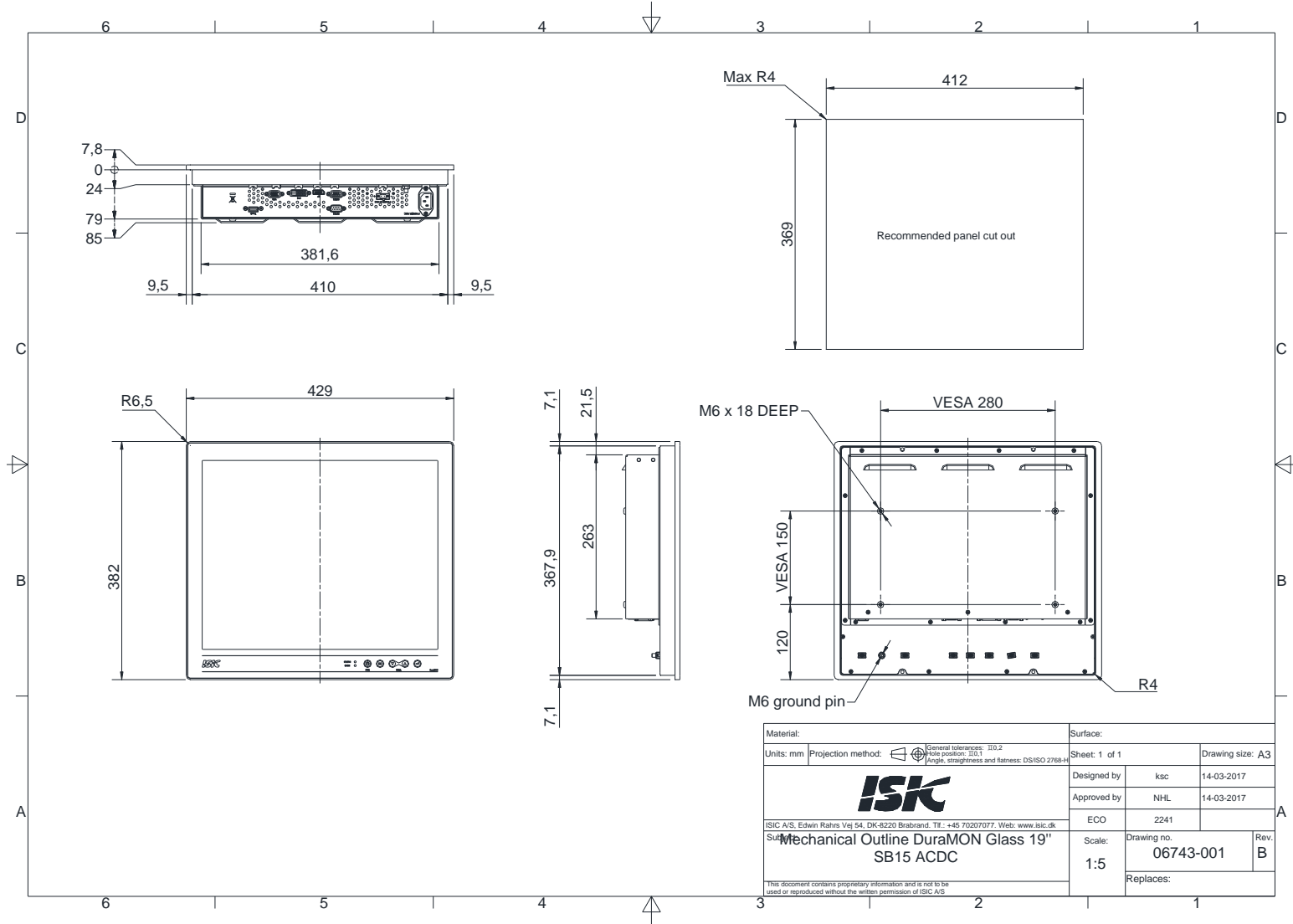


6.1 Specification DuraMON 32 GLASS

Resolution:	1920 x 1080
Active Area	698.4mm x 392.85mm (31,5" diagonal)
Pixel Pitch:	0,3637 mm x 0, 3637 mm
View angle:	89° (L/R/T/B) (typical)
Viewing distance:	1,08 m
Luminance:	450 cd/m ² (typical)
Contrast ratio:	3000:1 (typical)
Colors:	16.7 mill. (24-bit)
Response Time:	8 ms (GtG) (typical)
Window:	Anti-Reflective coated front glass
Protection:	IP65 front – IP20 rear
Weight:	18 kg
Dimensions (WxHxD):	762 mm x 476 mm x 77,6 mm



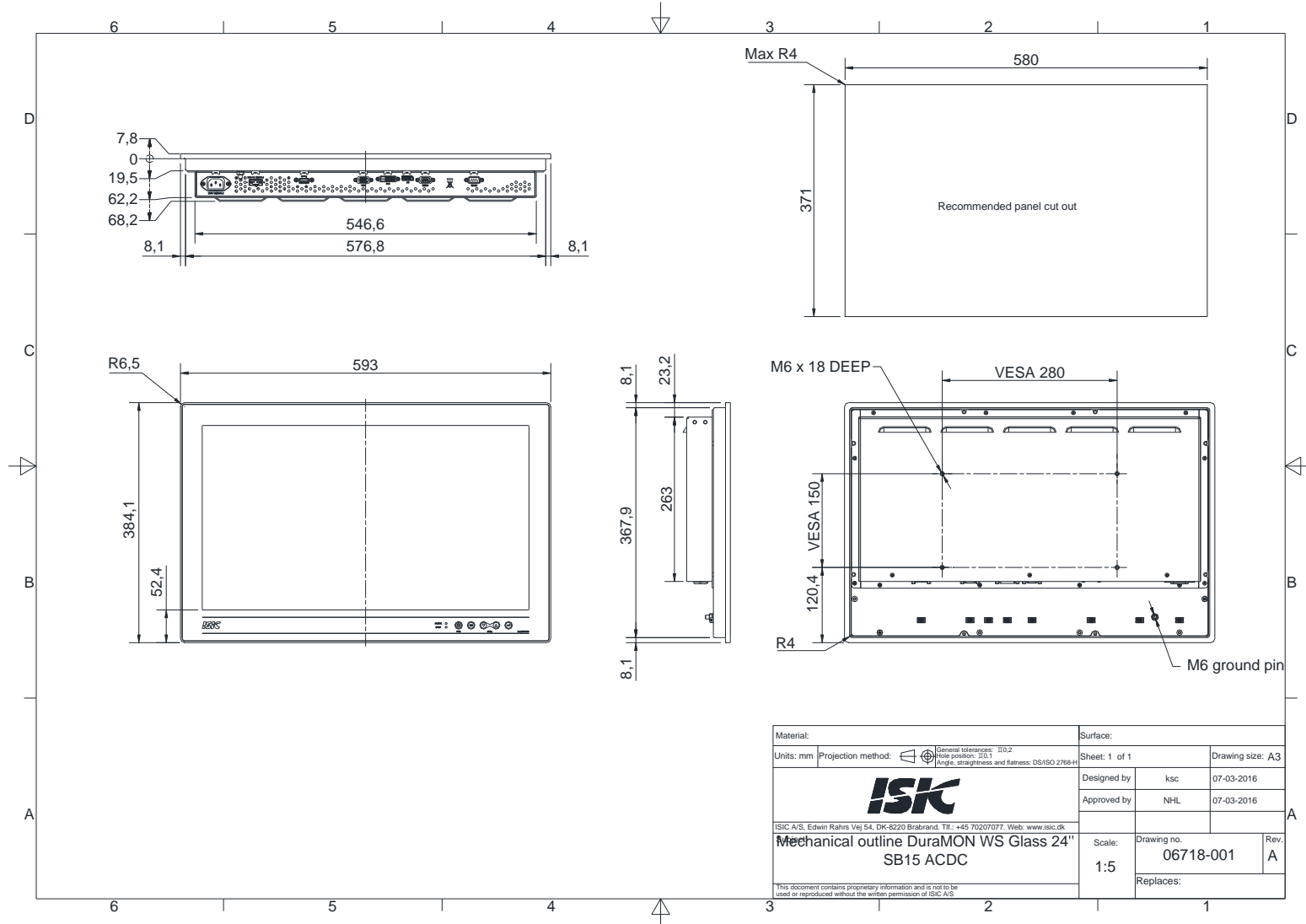
6.2 Mechanical outline DuraMON 19 GLASS



Material:		Surface:	
Units: mm	Projection method:	General tolerances: ISO 2	Sheet: 1 of 1
		Hole position: ISO 1	Drawing size: A3
		Profile, straightness and flatness: DS/ISO 2768-H	
ISIC A/S, Edwin Rahrs Vej 54, DK-8220 Brabrand, Tlf.: +45 70207077, Web: www.isic.dk Supplier: Mechanical Outline DuraMON Glass 19" SB15 ACDC		Designed by: ksc	14-03-2017
		Approved by: NHL	14-03-2017
		ECO: 2241	
		Scale: 1:5	Drawing no. 06743-001
		Replaces:	
<small>This document contains proprietary information and is not to be used or reproduced without the written permission of ISIC A/S</small>		Rev. B	



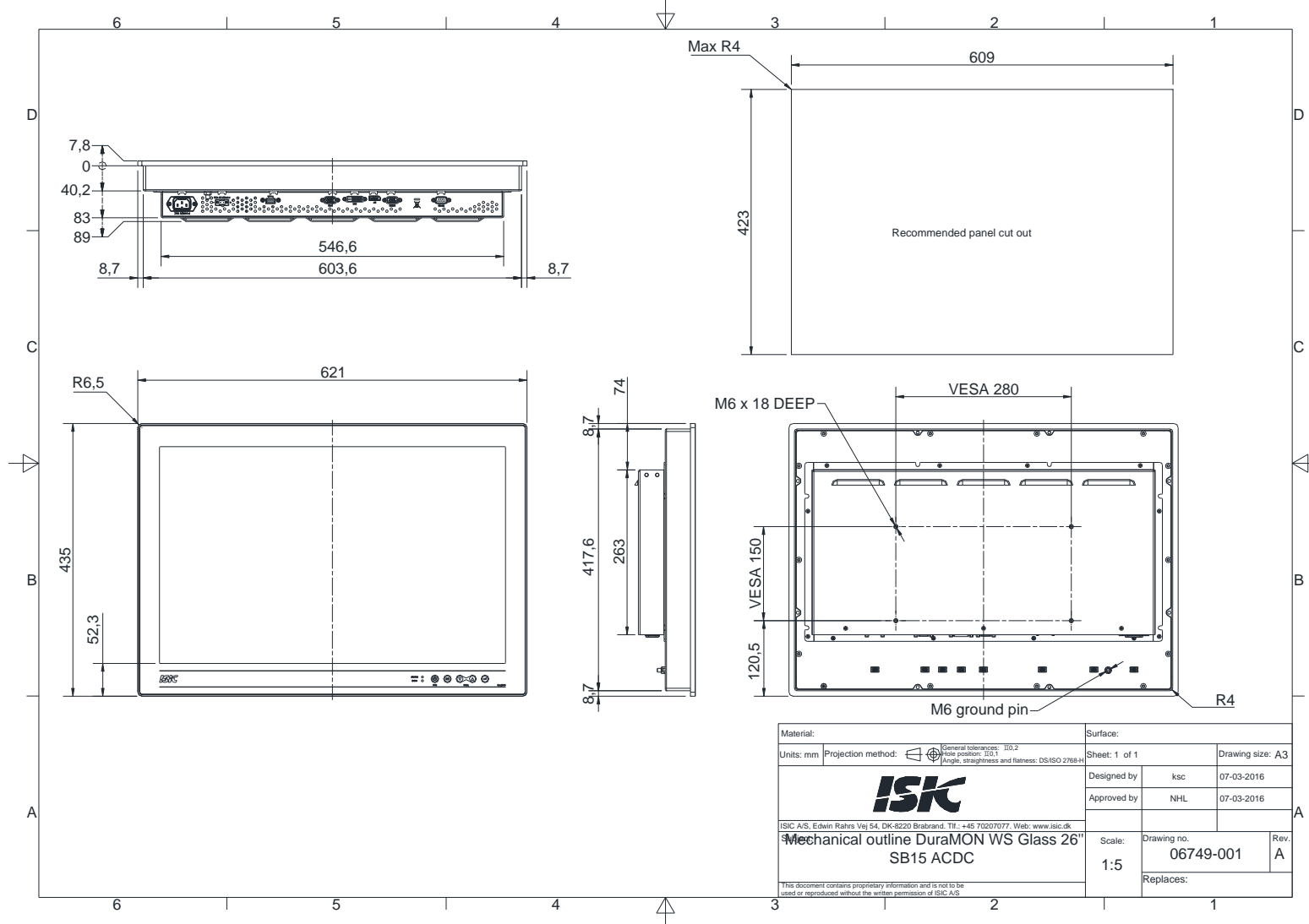
6.3 Mechanical outline DuraMON 24 GLASS



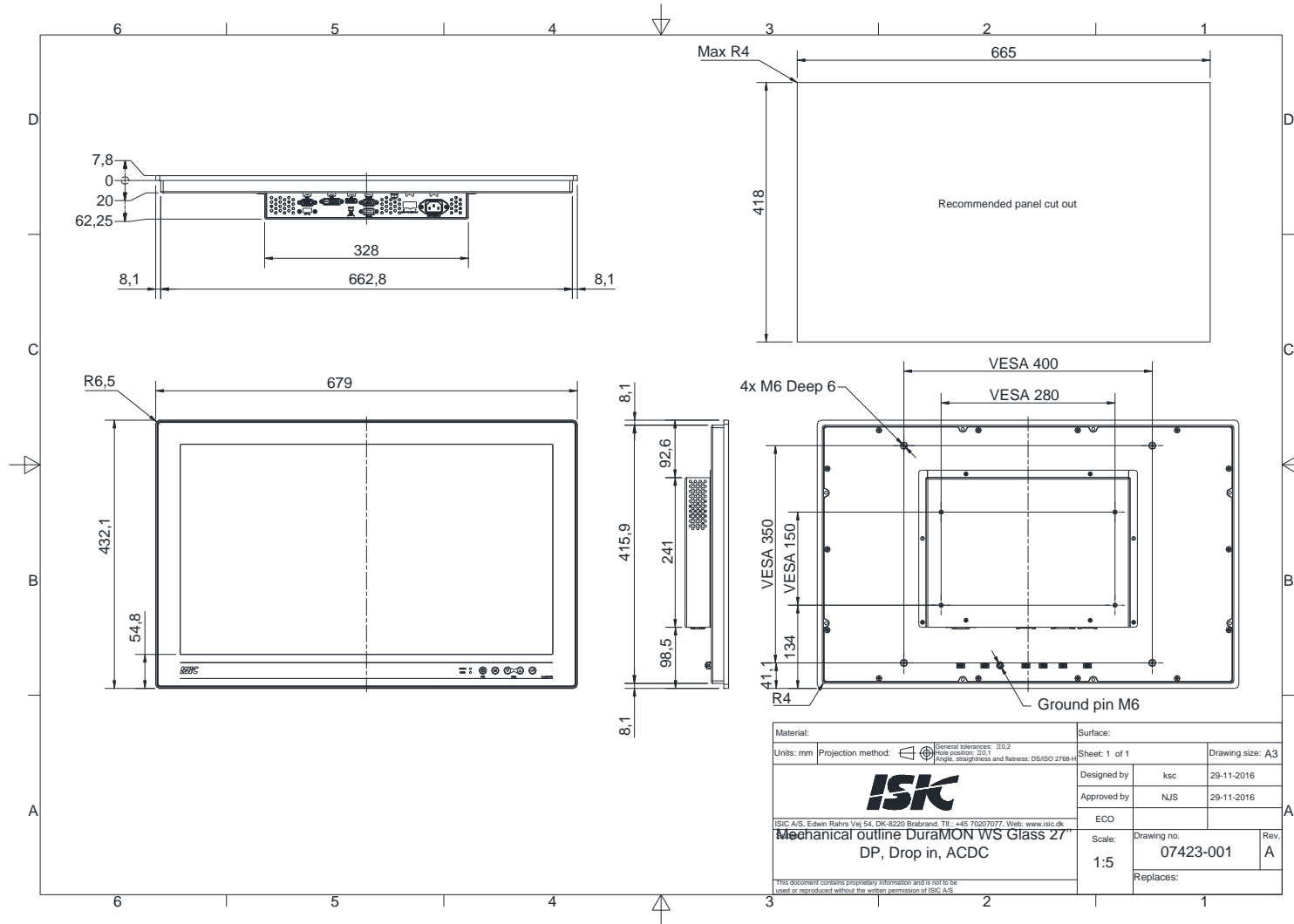
Material:		Surface:	
Units: mm	Projection method:	General tolerances: ISO 2768-MS	Sheet: 1 of 1
		Weld position: ISO 1171	Drawing size: A3
		Angle, straightness and flatness: DIN ISO 2768-H	Designed by: ksc 07-03-2016
ISK A/S, Edwin Rahns Vej 54, DK-8220 Brabrand, Tlf.: +45 70207077, Web: www.isk.dk Mechanical outline DuraMON WS Glass 24" SB15 ACDC		Approved by: NHL 07-03-2016	Replaces:
		Scale: 1:5	Drawing no. 06718-001
<small>This document contains proprietary information and is not to be used or reproduced without the written permission of ISK A/S</small>			



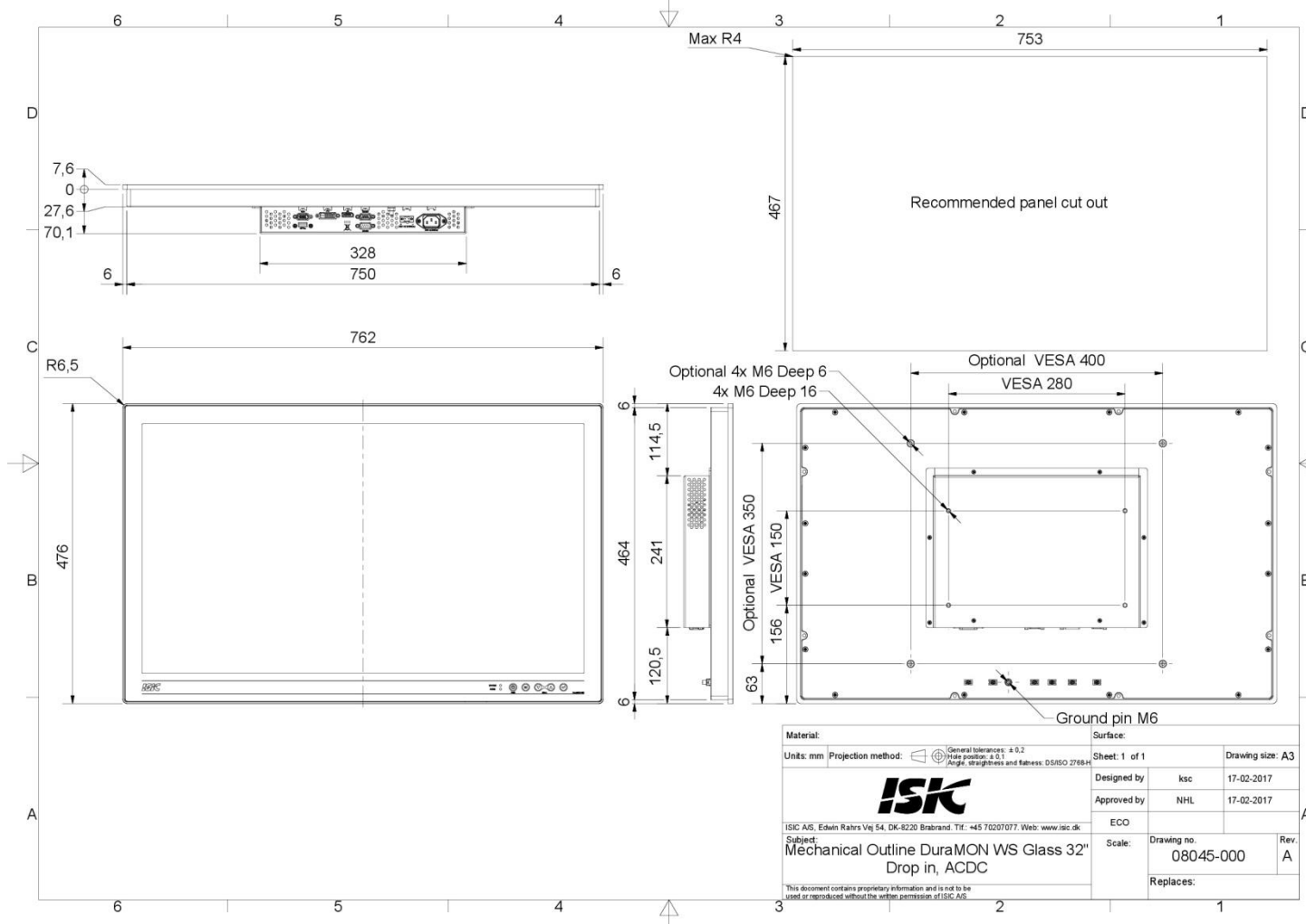
6.4 Mechanical outline DuraMON 26 GLASS



6.5 Mechanical outline DuraMON 27 GLASS

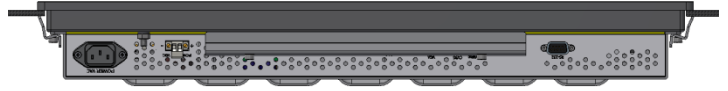


6.6 Mechanical outline DuraMON 32 GLASS

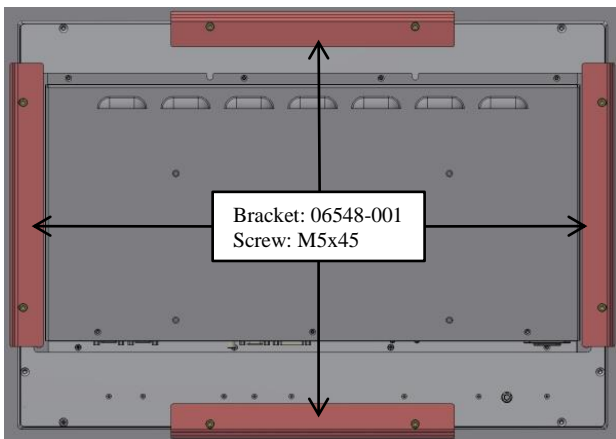


7 Mounting of DuraMON Glass in console

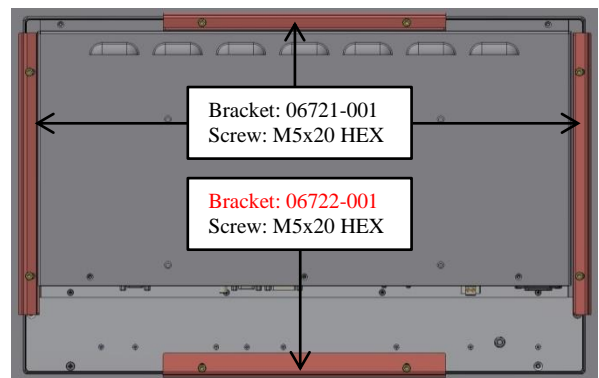
- 1) Place the monitor in the cut out and mount the brackets as illustrated with the screws that comes with the monitor.
(Thickness of mounting plate 2mm – 12mm.)
- 2) Tighten screws to lock brackets (3 Nm).



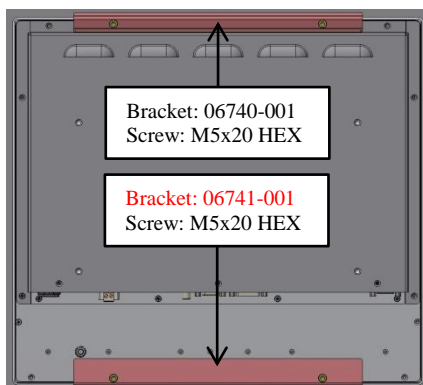
DuraMON Glass 26 Monitor



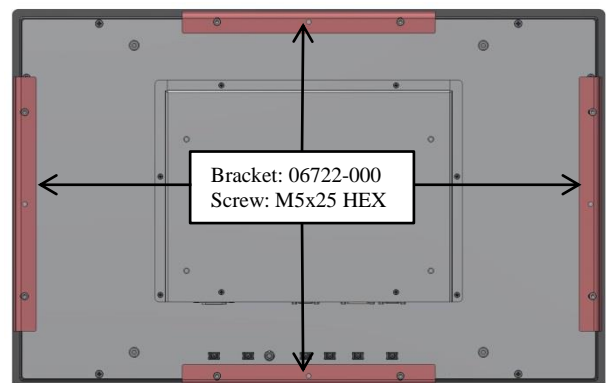
DuraMON Glass 24 Monitor



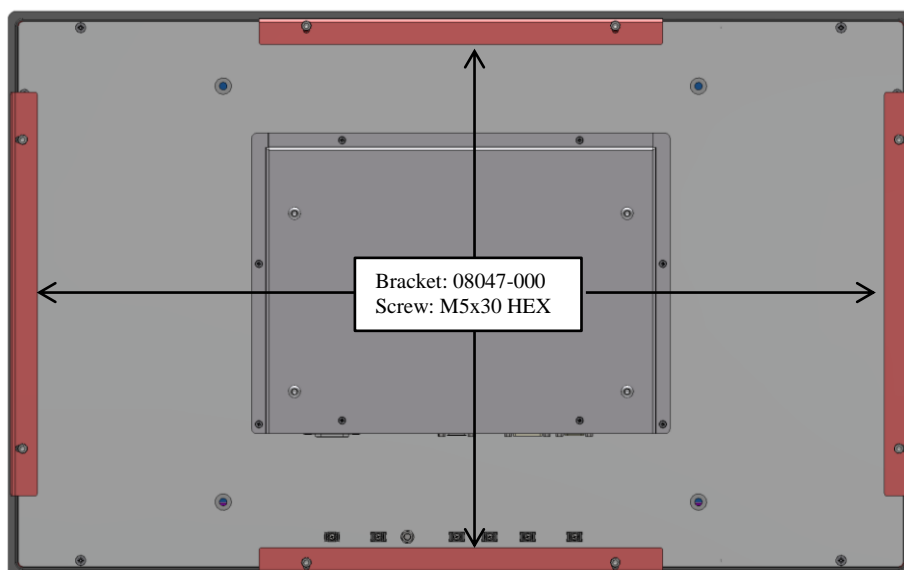
DuraMON Glass 19 Monitor



DuraMON Glass 27 Monitor



DuraMON Glass 32 Monitor



Notice:

Always use original screws or similar type. To avoid breaking the front glass, never tighten screws unless mounted with bracket.



8 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.

9 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 GLASS 19	DuraMON GLASS 19
DuraMON GLASS 24	DuraMON GLASS 24
DuraMON GLASS 26	DuraMON GLASS 26
DuraMON GLASS 27	DuraMON GLASS 27
DuraMON GLASS 32	DuraMON GLASS 32

10 Buzzer

Controlled by serial command, See document 04924-001 for protocol details.

11 Touch driver

If the monitor is equipped with a PCAP touch sensor the controller is HID Multi-touch compatible.

Microsoft Windows 7, 8 &10 has the driver as part of the operating system.

Some Linux systems come with the HID driver as part of the Linux kernel.



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 19 GLASS	165	105
DuraMON 24 GLASS	225	135
DuraMON 26 GLASS	190	115
DuraMON 27 GLASS	220	135
DuraMON 32 GLASS	285	155

13 Power Consumption

Test object / condition	P _{typ} [W]	P _{max} [W]
DuraMON 19 GLASS	35	45
DuraMON 24 GLASS	25	30
DuraMON 26 GLASS	50	60
DuraMON 27 GLASS	30	35
DuraMON 32 GLASS	50	60

14 Inrush current


Test object / condition	24 [VDC]	115 [VAC]	230 [VAC]
DuraMON 19 GLASS	105	55	100
DuraMON 24 GLASS	105	55	100
DuraMON 26 GLASS	105	60	110
DuraMON 27 GLASS	105	55	100
DuraMON 32 GLASS	105	60	110



15 OSD Menu

15.1 Popup Menu

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

<p>Press “up” or “down”</p>	 <p style="text-align: center;">Backlight</p> <p style="text-align: right;">80</p>	<p>It is now possible to adjust the backlight level by pressing either up- or down key.</p>
-----------------------------	---	---

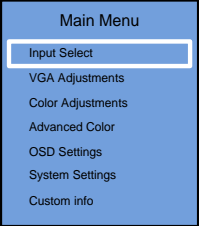
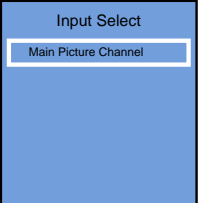
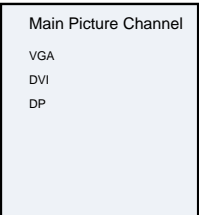
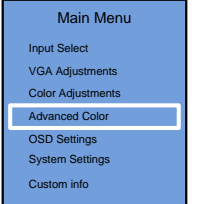
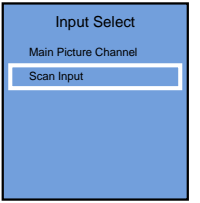
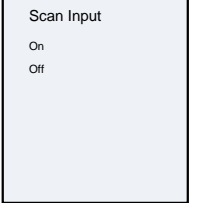
15.2 Advanced OSD

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 both the “ENTER” and the “MENU” button at the same time.

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.

15.3 Input select

Input Select – Main Picture Channel	Input Select – Scan Input
<div style="display: flex; justify-content: space-between;"> <div style="width: 25%;">  <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div style="width: 50%;"> <p>The Main Picture Channel can be selected between all available inputs (VGA, Display Port and DVI).</p> </div> <div style="width: 25%;">  <p>Input Select</p> <ul style="list-style-type: none"> Main Picture Channel </div> </div> <div style="margin-top: 10px;">  <p>Main Picture Channel</p> <ul style="list-style-type: none"> VGA DVI DP </div>	<div style="display: flex; justify-content: space-between;"> <div style="width: 25%;">  <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div style="width: 50%;"> <p>Scans Inputs for active source.</p> <p>Default is On.</p> </div> <div style="width: 25%;">  <p>Input Select</p> <ul style="list-style-type: none"> Main Picture Channel Scan Input </div> </div> <div style="margin-top: 10px;">  <p>Scan Input</p> <ul style="list-style-type: none"> On Off </div>



15.4 VGA Adjustments

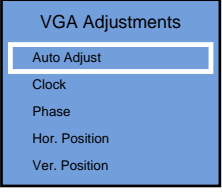
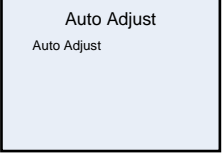
<p>Image Adjustments – Auto Adjust</p>  <p>Main Menu Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info</p>  <p>VGA Adjustments Auto Adjust Clock Phase Hor. Position Ver. Position</p>  <p>Auto Adjust Auto Adjust</p>	<p>Selecting auto adjust will force the system to adjust the image (clock, phase, bandwidth and position)</p>	<p>Image Adjustments – Clock</p>  <p>Main Menu Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info</p>  <p>VGA Adjustments Auto Adjust Clock Phase Hor. Position Ver. Position</p>  <p>Clock Value MIN MAX</p>	<p>The pixel clock for VGA can be selected here.</p>
<p>Image Adjustments – Phase</p>  <p>Main Menu Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info</p>  <p>VGA Adjustments Auto Adjust Clock Phase Hor. Position Ver. Position</p>  <p>Phase Value MIN MAX</p>	<p>The phase of the display can be set for VGA.</p>	<p>Image Adjustments – Hor. Position</p>  <p>Main Menu Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info</p>  <p>VGA Adjustments Auto Adjust Clock Phase Hor. Position Ver. Position</p>  <p>Hor. Position Value MIN MAX</p>	<p>The horizontal position of the picture can be set here.</p>



Image Adjustments – Vert. Position

<p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info 	<p>The vertical position of the picture can be set here.</p>
<p>VGA Adjustments</p> <ul style="list-style-type: none"> Auto Adjust Clock Phase Hor. Position Ver. Position 	
<p>Ver. Position</p> <p>Value</p> <p>MIN [Slider] MAX</p>	

15.5 Color adjustments (not available in ECDIS mode)

Color Adjustment – Backlight	Color Adjustment – Brightness
<p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info 	<p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info
<p>It is possible to set the backlight level.</p> <p>Default is 50%.</p>	<p>It is possible to set the brightness level.</p> <p>Default is 50%.</p>
<p>Color Adjustments</p> <ul style="list-style-type: none"> Backlight Brightness Contrast Saturation Hue Auto Color Adjust 	<p>Color Adjustments</p> <ul style="list-style-type: none"> Backlight Brightness Contrast Saturation Hue Auto Color Adjust
<p>Backlight</p> <p>Value</p> <p>MIN [Slider] MAX</p>	<p>Brightness</p> <p>Value</p> <p>MIN [Slider] MAX</p>
<p><i>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.</i></p>	



<p>Color Adjustment – Contrast</p>   	<p>It is possible to set the Contrast level.</p> <p>Default is 50%.</p>	<p>Color Adjustment – Saturation</p>   	<p>It is possible to set the color saturation level.</p> <p>Default is 50%.</p>
<p>Color Adjustment – Hue</p>   	<p>It is possible to set the Hue level.</p> <p>Default is 50%.</p>	<p>Color Adjustment – Auto Color Adjust</p>   	<p>It is possible to set use the command Auto Color Adjust.</p>






15.6 Advanced Color (not available in ECDIS mode)

Adv. Color Settings – Gamma	Adv. Color Settings – Color Temp
<div data-bbox="156 376 368 607"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="156 618 368 898"> <p>Advanced Color</p> <ul style="list-style-type: none"> Gamma Color Temperature Red Gain Green Gain Blue Gain </div> <div data-bbox="156 909 368 1126"> <p>Gamma</p> <ul style="list-style-type: none"> √ Native 2.2 2.4 </div>	<div data-bbox="834 376 1046 607"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="834 618 1046 797"> <p>Advanced Color</p> <ul style="list-style-type: none"> Gamma Color Temperature Red Gain Green Gain Blue Gain </div> <div data-bbox="834 808 1046 1039"> <p>Color Temperature</p> <ul style="list-style-type: none"> √ User 4200K 5000K 5400K 6500K 7500K 9300K </div>
<div data-bbox="148 1149 770 1182"> <p>Adv. Color Settings – Red/Green/Blue</p> </div> <div data-bbox="156 1193 368 1424"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="156 1435 368 1615"> <p>Advanced Color</p> <ul style="list-style-type: none"> Gamma Color Temperature Red Gain Green Gain Blue Gain </div> <div data-bbox="156 1626 368 1843"> <p>Red Gain</p> <p>0 Value 255</p>  </div>	<div data-bbox="403 1182 770 1283"> <p>The rate for Red/Green/Blue can be set here from 0 – 255.</p> </div> <div data-bbox="403 1305 770 1350"> <p>Default is 255/255/255</p> </div> <div data-bbox="403 1373 770 1473"> <p>Note: These values are only adjustable when Color Temperature is set to 'User'</p> </div>



15.7 OSD settings

OSD Settings – Menu Timeout	OSD Settings – Menu Hor. Pos.
<div data-bbox="156 344 359 568"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="156 577 359 730"> <p>OSD Settings</p> <ul style="list-style-type: none"> Timeout Hor. Position Ver. Position Transparency </div> <div data-bbox="156 739 359 958"> <p>Timeout</p>  <p>MIN [Value] MAX</p> </div>	<div data-bbox="842 344 1045 568"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="842 577 1045 730"> <p>OSD Settings</p> <ul style="list-style-type: none"> Timeout Hor. Position Ver. Position Transparency </div> <div data-bbox="842 739 1045 958"> <p>Hor. Position</p>  <p>MIN [Value] MAX</p> </div>
<div data-bbox="156 1061 359 1323"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="156 1332 359 1485"> <p>OSD Settings</p> <ul style="list-style-type: none"> Timeout Hor. Position Ver. Position Transparency </div> <div data-bbox="156 1494 359 1711"> <p>Ver. Position</p>  <p>MIN [Value] MAX</p> </div>	<div data-bbox="842 1061 1045 1323"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="842 1332 1045 1485"> <p>OSD Settings</p> <ul style="list-style-type: none"> Timeout Hor. Position Ver. Position Transparency </div> <div data-bbox="842 1494 1045 1711"> <p>Transparency</p>  <p>MIN [Value] MAX</p> </div>



15.8 System settings

System Settings – Aspect Ratio	System Settings – Load Factory Defaults
<div data-bbox="156 342 354 562"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="156 573 354 712"> <p>System Settings</p> <ul style="list-style-type: none"> Aspect Ratio Load Factory Defaults </div> <div data-bbox="156 723 354 936"> <p>Aspect Ratio</p> <ul style="list-style-type: none"> Full 16:9 4:3 5:4 </div>	<div data-bbox="833 342 1031 562"> <p>Main Menu</p> <ul style="list-style-type: none"> Input Select VGA Adjustments Color Adjustments Advanced Color OSD Settings System Settings Custom info </div> <div data-bbox="833 573 1031 712"> <p>System Settings</p> <ul style="list-style-type: none"> Aspect Ratio Load Factory Defaults </div> <div data-bbox="833 723 1031 936"> <p>System info</p> <p>1920x1080</p> </div>



16 Troubleshooting

Problem	Cause	Solutions
No picture on display	Backlight level 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
Buttons on front doesn't work	Unit in ECDIS mode	Press Menu + Enter to unlock the monitor
Buttons on front doesn't work	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.



17 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.

18 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
GtG:	Grey to Grey
IP20:	International Protection Rating (protected against objects with a size larger than 12.5mm)
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



19 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: +45 70 20 70 77
Fax: +45 70 20 79 76

Mail: 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 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



20 Revision history

Rev A	June 2016	First release
Rev B	November 18, 2016	<p>Page 1, added DuraMON 27 GLASS</p> <p>Page 8, added I/O drawing</p> <p>Page 9, section 6.1, added: Scan Inputs;</p> <p>Page 14, added: Change Aspect Ratio.</p> <p>Page 15, corrected vert position and transparency in bottom menu.</p> <p>Page 16, section 8, Input voltage changed to 18-31VDC, added: Buzzer</p> <p>Page 19, view distance for 27" changed to 1.08m</p> <p>Page 22, section 15, added: Buzzer;</p> <p>Page 23, added outline drawing</p> <p>Page 23, DuraMON 19 GLASS, changed: max power 45W</p> <p>Page 25, added 27" to Serial protocol and compass distance</p> <p>Page 26, added power consumption and inrush current for 27"</p>
Rev C	December 22, 2016	<p>Page 19, updated weight for 27"</p> <p>Page 24, added 27 mounting illustration</p> <p>Page 25, added compass safe distance for 27"</p>
Rev D	May 16, 2017	<p>Page 1, added DuraMON 32</p> <p>Page 6, added 32" to warm up table</p> <p>Page 8, added 32" I/O drawing</p> <p>Page 11, Changed 422 & 485 to optional and male connector</p> <p>Page 12, changed DC voltage to 18-31VDC</p> <p>Page 13, changed 27" brightness to 300 cd</p> <p>Page 15, updated 19" outline, logo ISIC</p> <p>Page 18, updated 27" outline, logo ISIC</p> <p>Page 19, changed video input information</p> <p>Page 21, added 32" specification</p> <p>Page 26, added 32" mechanical dimensions</p> <p>Page 28, added outline for rear part of 32" monitor</p> <p>Page 29, added 32" compass safe distance and response from serial protocol</p> <p>Page 30, added power consumption and inrush current for 32"</p> <p>Moved section OSD to end of manual</p>



21 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 ($2 \times N_{3a} + N_{3b}$)	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 $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- Relative air humidity 40–70%

Pixel definition

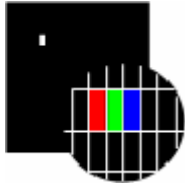
Every pixel consists of three sub-pixels/dots (red, blue, green).

Every sub-pixel has its own transistor.

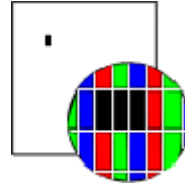
The three sub-pixels/dots must be considered as one unit.



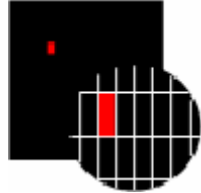
Pixel



Pixel defect type 1 Pixel constantly lit



Pixel defect type 2 Pixel constantly dark



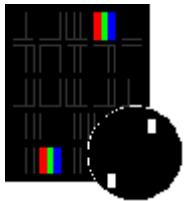
Pixel defect type 3a
Sub-pixel/dot (red, blue, green) constantly lit



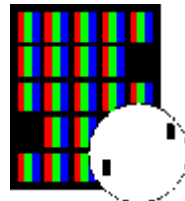
Pixel defect type 3b
Sub-pixel/dot (red, blue, green) constantly dark

Cluster

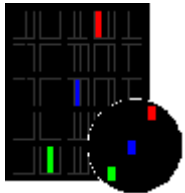
A cluster consists of 5 x 5 pixels.



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 ($2 \times N_{3a} + N_{3b}$)	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

