

User Manual

DuraMON 7"



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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 (like on old CRT's). This is not a permanently situation and can be removed by operating the monitor with a completely black screen.

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.



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.

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1 Features

Congratulations on your purchase of a DuraMON 7". This short form manual is designed to get you started working with your new DuraMON 7".

The DuraMON 7" series of Panel Computers are all designed for the demanding operating conditions at sea.

The DuraMON 7" series are tested for full compliance to marine-standards IACS E10 and IEC 60945.

The DuraMON 7" 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 DVI or VGA cable with ferrites, like the one supplied with the unit.

2 General considerations on Installation and Operation

The DuraMON 7" 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.

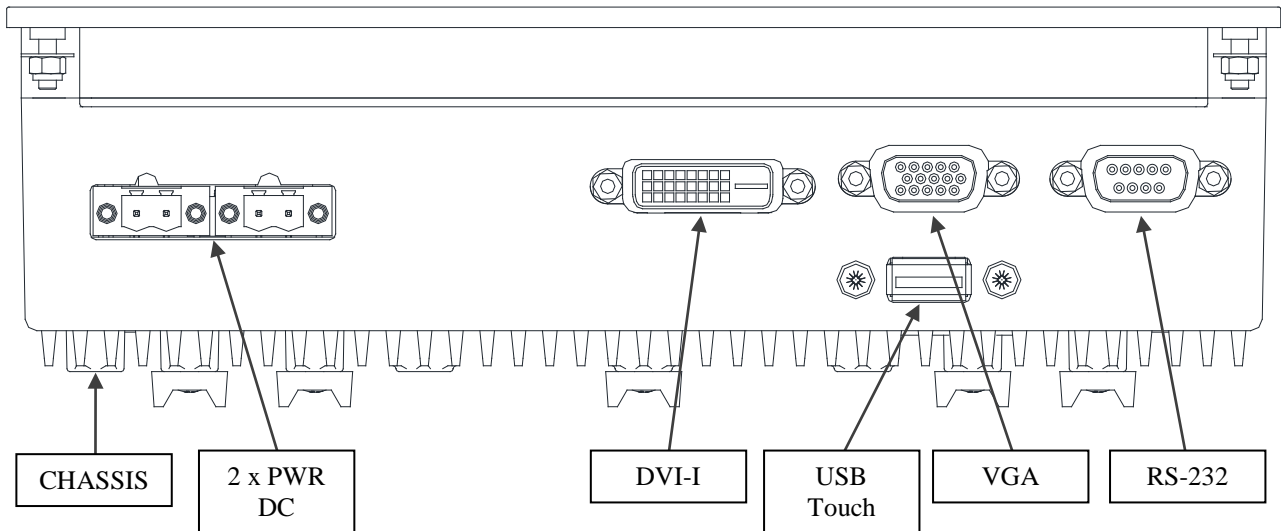
Installation of the DuraMON 7"

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 7", 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
The DuraMON 7" is designed for both horizontal and vertical installation.
- Sunlight
Avoid direct sunlight to keep temperature low by that improve lifetime.

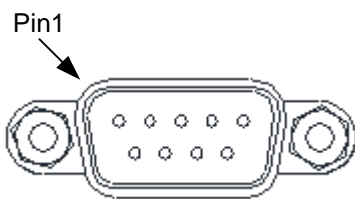
3 DuraMON 7" connections

Below is a view of connections to the DuraMON 7".



4 Connector pin-out

4.1 RS-232



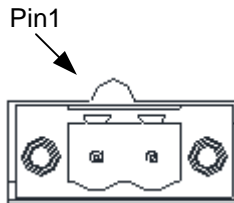
Pin	RS-232
	SUB-D 9-pol female
1	-
2	Monitor TX
3	Monitor RX
4	-
5	GND
6	-
7	-
8	-
9	-

Mating part: SUB-D 9 pole female, Norcomp 172-E09-20201 or equivalent.

4.2 Power input

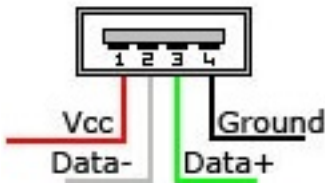
The nominal input power voltage is 24V. There are two independent galvanic isolated power inputs.

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



Pin	Power in
1	0VDC
2	24VDC

4.3 USB



Pin	USB
	Standard A
1	Vcc
2	Data -
3	Data +
4	GND

Technical specification DuraMON 7"

DuraMON 7"

Display size: 7 inch LCD (TFT), IPS technology
Resolution: 800 x 480
Active area: 152 x 91 mm
View angle: 89° (T/B), 89° (L/R) (typical)
Luminance: 450 Cd/m² (typical)
Contrast ratio: 800:1 (typical)
Touch: 10 finger PCAP touch (internal USB interface)
Front glass: Anti Reflection
Protection: IP56 (from front, when mounted)
IP22 (from rear)

DuraMON 7" – I/O

Video inputs: DVI, RGB
Control inputs: RS232 – for remote control
Touch: USB type A - female

DuraMON 7" - Power

Standard: 18-34VDC Galvanic isolated
Optional Dual input DC power, Galvanic isolated
Power Consumption: P_{typ} = 6 Watt, P_{max} = 8 Watt

DuraMON 7" - Environmental

Operating Temperature: -15 to +55 °C
Storage Temperature: -25 to +70 °C
Relative Humidity: 8 to 95 % (non-condensing)

DuraMON 7" - Approvals

CE Mark: EN61000-6-2
Marine: IACS E10 Rev. 5 & IEC 60945 Ed. 4
Shock: ±5G, 10ms in accordance with IEC 60068-2-27
Certificates: MR certificate

DuraMON 7" - Dimensions

Size: 218 (W) x 147mm (H) x 59mm (Depth behind bezel)
Weight: App. 2 kg.
Optional Bracket: Desk/ceiling-and wall-bracket (VESA 75x75mm)

5 DuraMON 7" WS communication protocol

To control the DuraMON 7" WS from a PC the commands below has to be used.

	Function	BYTE0	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
		Length	Set ID	CMD1	CMD2	CMD3	Checksum
POWER BUTTON	Power On/Off	6	0	'K' (0x4B)	'P' (0x50)	'W' (0x57)	0x08
MENU BUTTON	Menu/Exit	6	0	'K' (0x4B)	'M' (0x4D)	'N' (0x4E)	0x14
ENTER BUTTON	Enter	6	0	'K' (0x4B)	'M' (0x4D)	'O' (0x4F)	0x13
UP BUTTON	Up	6	0	'K' (0x4B)	'M' (0x4D)	'U' (0x55)	0x0D
DOWN BUTTON	Down	6	0	'K' (0x4B)	'M' (0x4D)	'D' (0x44)	0x1E
Checksum : BYTE0 + BYTE1 + BYTE2 + BYTE3 + BYTE4 + BYTE5 = 0							

Example:

Decrement backlight level one step (when no OSD is active):

BYTE0	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
0x06	0x00	0x4B	0x4D	0x44	0x1E

Reply from Monitor:

BYTE0	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5
0x64	0x6F	0x77	0x6E	0x0D	0x0A

6 DDC/CI commands

To avoid the additional serial cable it is also possible to control the DuraMON 7" WS through a DDC/CI (Display Data Channel Command Interface) integrated in the DVI cable/connector.

Data format:

BYTE0	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5	BYTE6	BYTE7
DEST	SOUR	LENG	SET_V	VCP	R/W	VALU	CHK

DEST	Destination address
SOURCE	Source address
LENGTH	Length
SET_VCP	Set VCP Feature COMMAND
VCP	VCP command to use
R/W	Read or Write
VALUE	Value
CHK	Checksum

6.1 VCP functions

VCP 10h (Backlight brightness)

Value range: 0x00 – 0x5A

Example:

Set Backlight brightness to 0x5A (90%):

BYTE0	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5	BYTE6	BYTE7
0x6E	0x51	0x84	0x03	0x10	0x00	0x5A	0xF2

VCP 12h (Contrast)

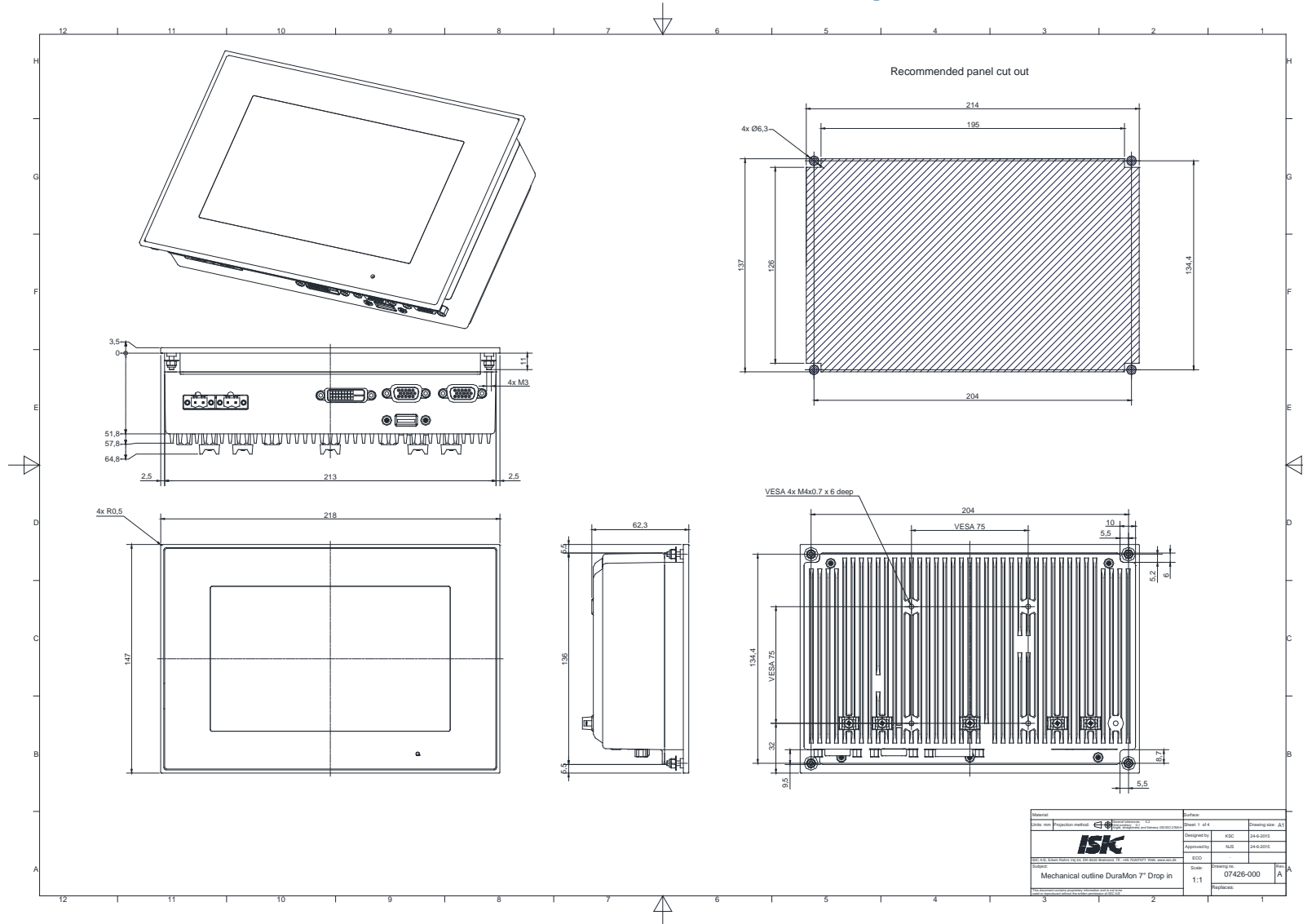
Value range: 0x00 – 0x64

Example:

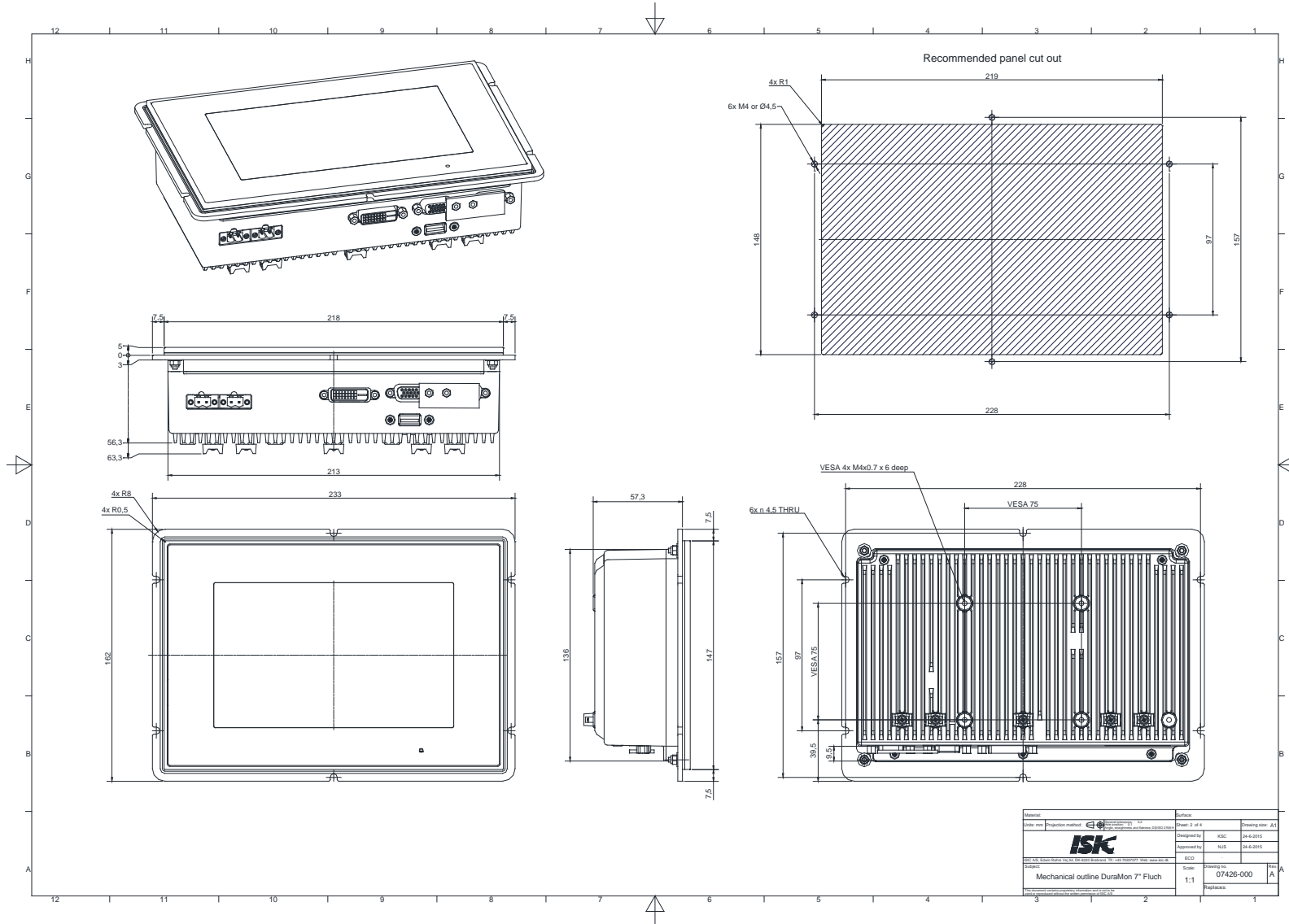
Set Contrast to 0x32 (50%):

BYTE0	BYTE1	BYTE2	BYTE3	BYTE4	BYTE5	BYTE6	BYTE7
0x6E	0x51	0x84	0x03	0x12	0x00	0x32	0x98

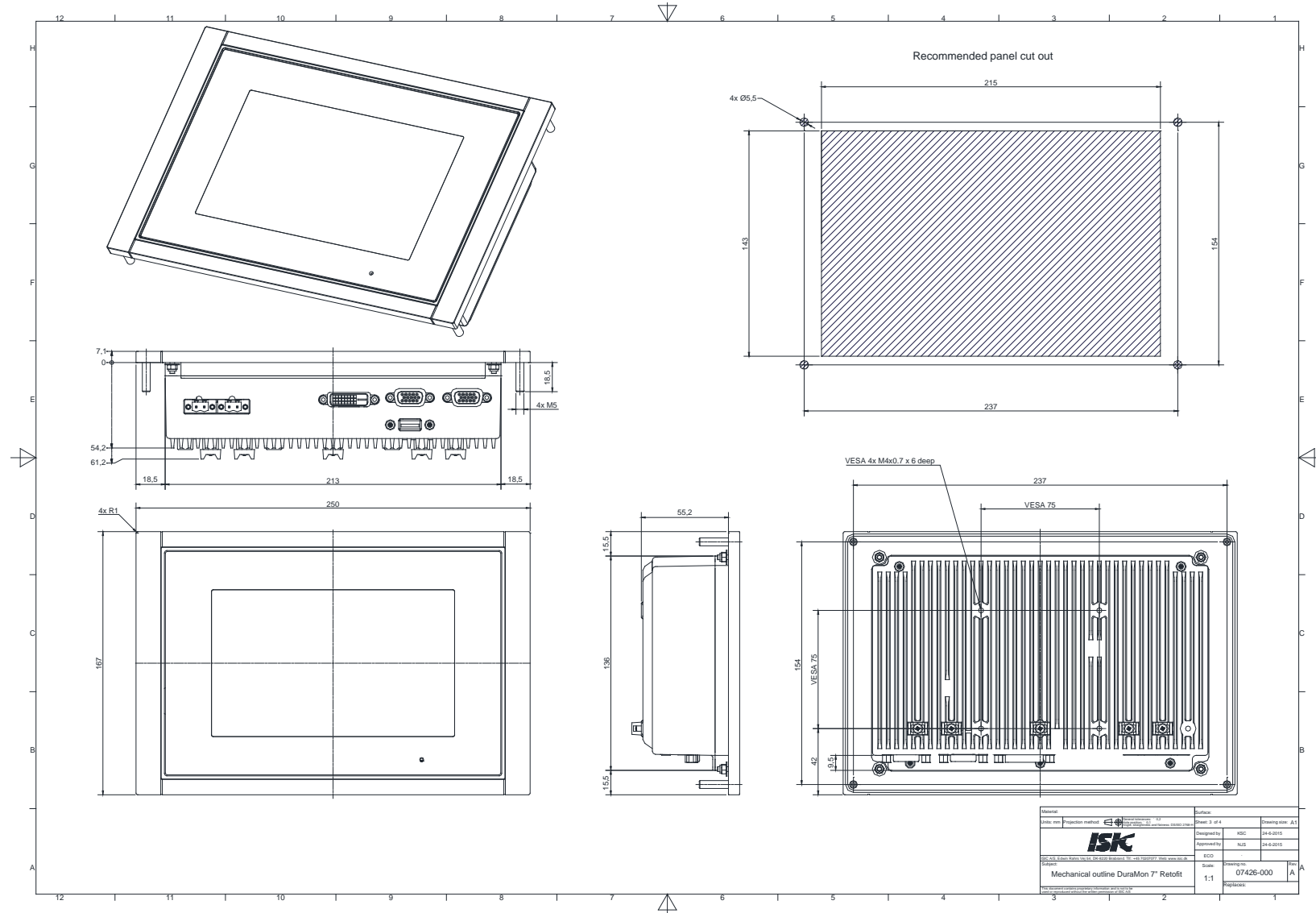
7 Mechanical outline DuraMON 7" – Drop in



8 Mechanical outline DuraMON 7" – Flush mount



9 Mechanical outline DuraMON 7" – Retrofit



Material:	Surface:
Scale:	Sheet:
ISIC	Designed by:
Mechanical outline DuraMon 7" Retrofit	Approved by:
Scale:	ECO
1:1	07426-000
	Rev:
	A

10 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 7"	50 cm	35 cm

11 Power Consumption

Test object / condition	P _{typ} [W]	P _{max} [W]
DuraMON 7"	6W	8W

12 In rush current

Test object / condition	[A] @24VDC
DuraPanel 7"	~ 85

13 Troubleshooting

Problem	Cause	Solutions
No picture on display	No power connected	Apply power
Touch has an offset	No grounding of the chassis	Connect ground cable to chassis screw
	No calibration of touch	Calibrate touch

14 Servicing the unit

In case that the unit still fails after following the troubleshooting send the unit to ISIC for repair via our RMA service on our web.

15 ISIC info / Support

In case you have inquiries or problems with your DuraMON 7", you have a number of possibilities to get support.

Company name: ISIC A/S

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Mail: mail@isic-systems.com
www: www.isic-systems.com

VAT number: DK 16 70 45 39

Bank Name/Address: Handelsbanken A/S
Havneholmen 29
DK-1561 København V
Denmark

Bank Code: 0892
SWIFT: HANDDKKK
IBAN for DKK: DK53 0892 0001 0159 69

IBAN for EUR: DK48 0892 0003 0026 19

IBAN for USD: DK26 0892 0003 0026 27

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 www.isic-systems.com under RMA
By mail to service@isic-systems.com

16 Revision history

Rev A	June 2015	First release

17 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

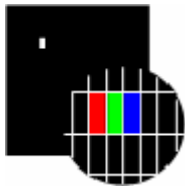
Every pixel consists of three sub-pixels/dots (red, blue, green).

Every sub-pixel has its own transistor.

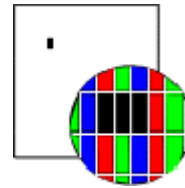
The three sub-pixels/dots must be considered as one unit.



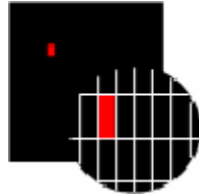
Pixel



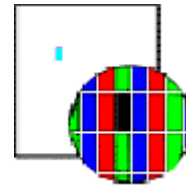
Pixel defect type 1 Pixel constantly lit



Pixel defect type 2 Pixel constantly dark



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



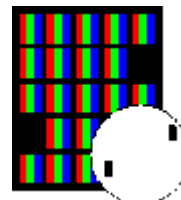
Pixel defect type 3b
Sub-pixel/dot (red, blue, green) constantly dark

Cluster

A cluster consists of 5 x 5 pixels.



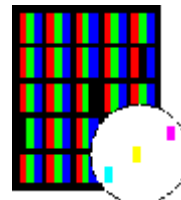
Cluster pixel defect type 1
Pixels in a cluster area constantly lit



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

18 Appendix B: Certificate of Conformity



EC DECLARATION OF CONFORMITY

We, manufacturer

ISIC A/S

Edwin Rahrs Vej 54, DK-8220 Brabrand, Denmark

hereby certifies that the

Product:

Category: Marine Display

Type: DuraMON

Models: 7"

ISIC Part Nos.: 07007-XXX

Is designed, manufactured and tested in Denmark, and complies with the requirements in the following directives and standards:

2004/108/EC EMC Directive
IEC 60945:2002
IACS E10:2006

Actual inspection/test data are on file and can be subject for examination.

23 June 2015



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Bo Lander Rasmussen, CEO



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