

DuraMON10-27

S-Line Series

DuraMON10.1 S-Line
DuraMON15.6 S-Line

User Reference Manual



Disclaimer

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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. Image sticking can be reduced by regular operate the monitor with moving pictures that is designed for the 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 DuraMON10-27 S-Line 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 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.

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1 Features

Congratulations on your product purchase of DuraMON10-27 S-Line series.
This short form manual is designed to get you started working with your new DuraMON10-27 S-Line.

DuraMON10-27 S-Line series of monitors are all made as rugged monitors especially designed for the demanding operating conditions at sea.

The DuraMON10-27 S-Line 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.

18-36VDC Marine isolated supply

2 x Display Port

Feature control support for DDC/CI VCP commands via DisplayPort interface and USB interface (Virtual COM Port)

Dimming control (1cd to 100%)

Anti-Reflective coated cover glass

IP65 protected front, mounted in sealed console.

USB Touch (Optional)

2 General considerations at Installation and Operation

DuraMON10-27 S-Line 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.

Installation of the DuraMON10-27 S-Line Series

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

- Cooling.

When mounting DuraMON10-27 S-Line 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.

3 Installation

Please also refer to Mechanical Outline for installation

3.1 Mechanical Outline

DuraMON 10.1 S-Line: 09311-000

DuraMON 15.6 S-Line: 09316-000

3.2 Desktop/Ceiling mounting kit with tilt

DuraMON 10.1 S-Line: 09313-000

DuraMON 15.6 S-Line: 09314-000

3.3 Console mounting kit (Sealing IP44):

DuraMON 10.1 S-Line: 09353-000

DuraMON 15.6 S-Line: 09354-000

3.4 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 10.1 S-Line	95	60
DuraMON 15.6 S-Line	110	70

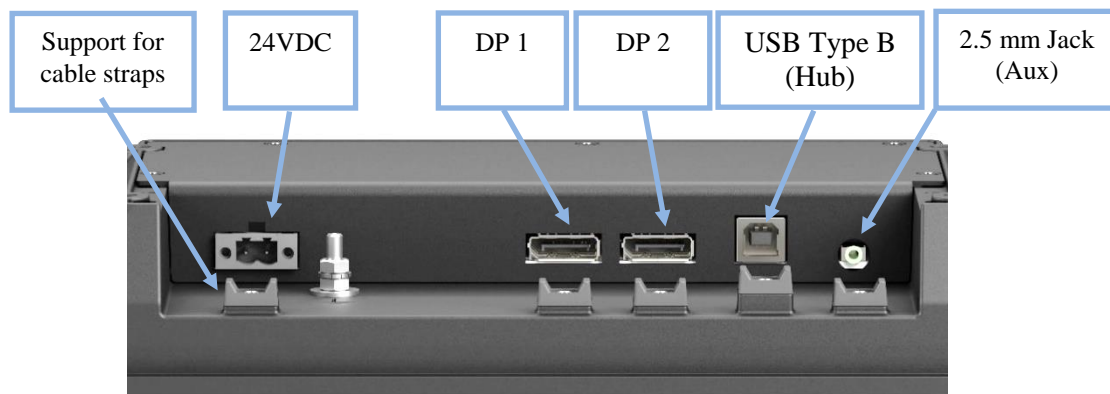
3.5 Power Consumption

Test object / condition	Ptyp [W]	Pmax [W]
DuraMON 10.1 S-Line	9.1	12
DuraMON 15.6 S-Line	17.5	21.4

3.6 Inrush current

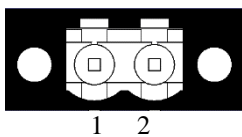
Test object / condition	Current[A] @ 24VDC
DuraMON 10.1 S-Line	4
DuraMON 15.6 S-Line	5

4 DuraMON10-27 S-Line connections



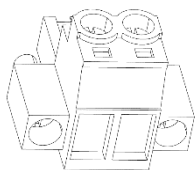
4.1 24VDC (18-36VDC) Supply Voltage

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



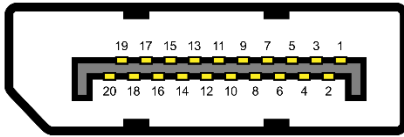
Terminal	Connection	Wire compliance
1	0VDC	Multicore AWG16-12 (1-4 mm ²)
2	24VDC	Multicore AWG16-12 (1-4 mm ²)

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



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

4.2 DisplayPort 1.2 (DP) receptacle

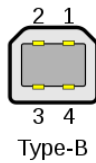


Mating part: Male full size DisplayPort connector with mechanical latch.

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

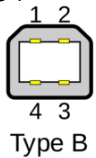
4.3 USB Type B receptacle



Type-B

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

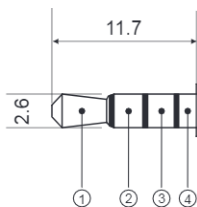
Mating part: Plug USB type B



Type B

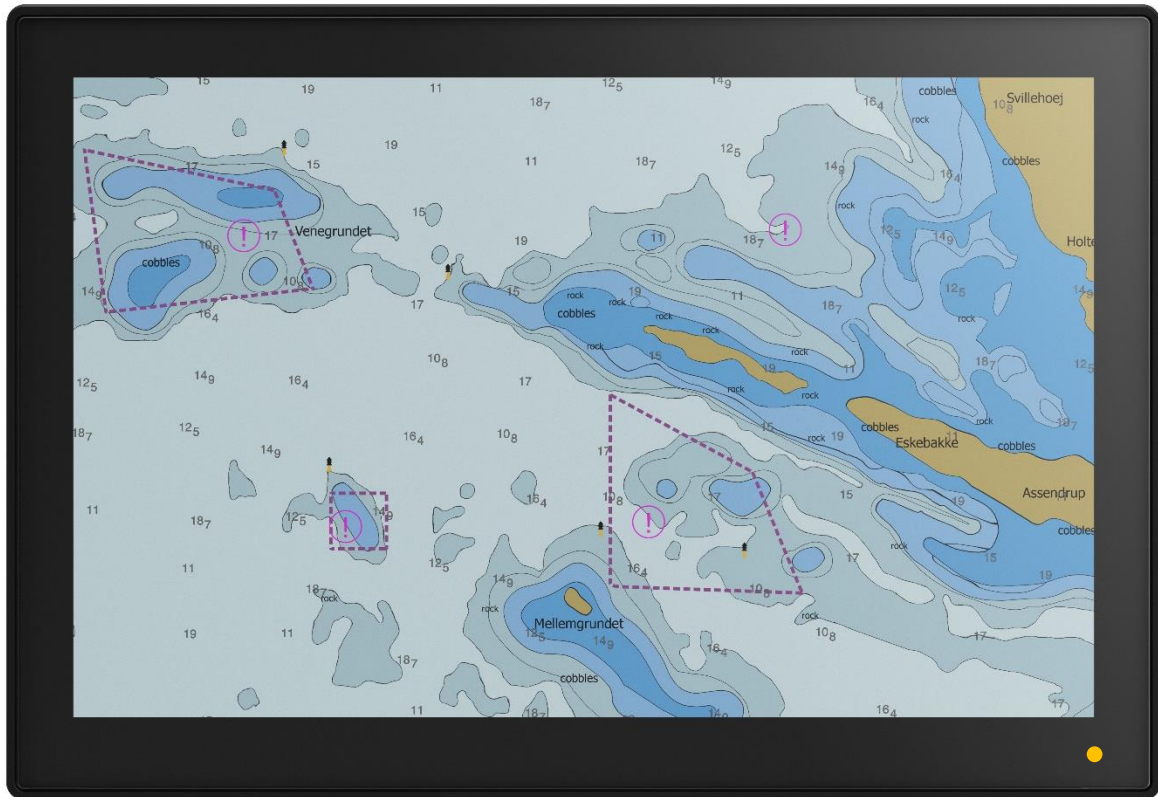
4.4 2.5 mm jack (reserved for future use)

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

5 DuraMON10-27 S-Line status LED



The LED is not marked on the front and is only visible when lit.

Status LED indicating color:

No light + LCD picture: OK - Normal operation

No light + LCD no picture: No power

Orange: Standby (brightness follows the LCD backlight setting)

6 Technical specifications DuraMON10-27 S-Line

Please refer to datasheet for the purchased variant

DuraMON 10.1 S-Line: 09328-000

DuraMON 15.6 S-Line: 09329-000

7 DuraMON S-Line Series Communication interface

DuraMON S-Line series support 2 type of communication protocols

DDC/CI VCP command via DisplayPort

Virtual Serial Communication via USB interface.

7.1 Virtual COM Port

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.

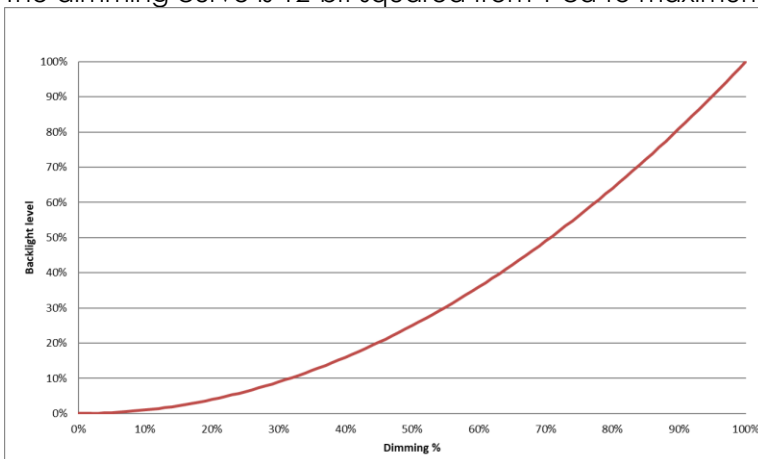
Monitor	Response from monitor
DuraMON 10.1 S-Line	DM101
DuraMON 15.6 S-Line	DM156

7.2 DDC/CI VCP Command

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

8 Dimming curve

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



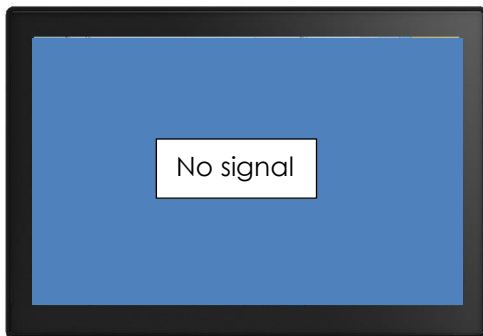
9 USB Touch

Monitors with optional multi-PCAP touch sensor comply to 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.

10 OSD

10.1 Standby

When no input signal is detected the screen will display "No signal" for 15 sec and enter standby mode.



11 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
The unit will not turn on.	Unknown	Please do not try to open the unit. Send it to ISIC A/S for repair.

12 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.

13 Terms, Acronyms and abbreviations

OSD: On Screen Display

14 ISIC info / Support

In case you have inquiries or problems with your DuraMON10-27 S-Line, you have a number of possibilities to get support.

Company name: ISIC A/S

Head office: Edwin Rahrs Vej 54
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Denmark

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DK-8220 Brabrand
Denmark

Telephone: +45 70 20 70 77

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 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



15 Revision history

Rev 0	April 2021	Preliminary
Rev A	June 2021	First release



16 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

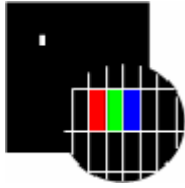
Every pixel consists of three sub-pixels/dots (red, blue, green).

Every sub-pixel has its own transistor.

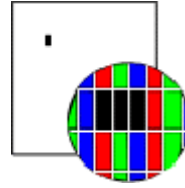
The three sub-pixels/dots must be considered as one unit.



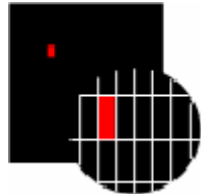
Pixel



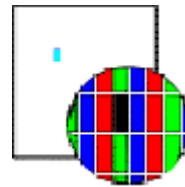
Pixel defect type 1 Pixel constantly lit



Pixel defect type 2 Pixel constantly dark



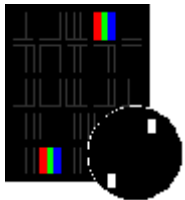
Pixel defect type 3a
Sub-pixel/dot (red, blue, green) constantly lit dark



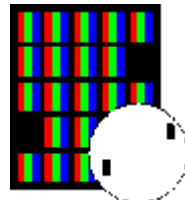
Pixel defect type 3b
Sub-pixel/dot (red, blue, green) constantly

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 dark



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

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





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